

Brant Jorgenson Robertson-Bryan, Inc. 9888 Kent Street Elk Grove, CA 95624 April 26, 2013

Brant:

I have enclosed our report "Evaluation of the Chronic Toxicity of Lehigh Permanente Cement Plant Site Water and Sediment Samples" for the samples collected March 25, 27, and 29, 2013. A summary of the results of this testing follows:

Chronic Effects of Lehigh Pond 4A Site Water

Chronic Effects of Lehigh Pond 4A Site Water on Selenastrum capricornutum The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 4A Site Water on Ceriodaphnia dubia

The survival EC25 was 16.6% site water, resulting in 6.0 TUc (where TUc = 100/ EC25). The reproduction IC25 was 6.1% site water, resulting in 16.5 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 4A Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 4A Site Water.								
Test Species Survival EC25 Survival TUc (100/EC25) Growth or Reproduction IC25 Growth or Reproduction TUc (100/IC25)								
Selenastrum capricornutum			>100% site water	<1				
Ceriodaphnia dubia	16.6% site water	6.0	6.1% site water	16.5				
Pimephales promelas	>100% site water	<1	>100% site water	<1				

Chronic Effects of Lehigh Pond 9 Site Water

Chronic Effects of Lehigh Pond 9 Site Water on Selenastrum capricornutum

The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 9 Site Water on Ceriodaphnia dubia

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The reproduction IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 9 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 9 Site Water.								
Test Species Survival EC25 Survival TUc (100/EC25) Growth or Reproduction IC25 Growth or Reproduction (100/IC25)								
Selenastrum capricornutum			>100% site water	<1				
Ceriodaphnia dubia	>100% site water	<1	>100% site water	<1				
Pimephales promelas	>100% site water	<1	>100% site water	<1				

Chronic Effects of Lehigh Pond 13 Site Water

Chronic Effects of Lehigh Pond 13 Site Water on Selenastrum capricornutum

The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 13 Site Water on Ceriodaphnia dubia

The survival EC25 was 6.9% site water, resulting in 14.5 TUc (where TUc = 100/ EC25). The reproduction IC25 was 3.7% site water, resulting in 27.3 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 13 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 13 Site Water.								
Test Species Survival EC25 Survival TUc (100/EC25) Growth or Reproduction IC25 Reproduction IC25								
Selenastrum capricornutum			>100% site water	<1				
Ceriodaphnia dubia	6.9% site water	14.5	3.7% site water	27.3				
Pimephales promelas	>100% site water	<1	>100% site water	<1				

Chronic Toxicity of Lehigh Pond 13 Sediment to Hyalella azteca

There was \underline{no} significant reduction in H. azteca survival or growth in the Lehigh Pond 13 sediment sample; the NOEC was 100% site water for both endpoints, resulting in 1 TUc (where TUc = 100/NOEC).

Chronic Effects of Lehigh Pond 13 Sediment.							
Test Species Survival NOEC Survival TUc (100/NOEC) Growth NOEC Growth T (100/NOEC)							
Hyalella azteca 100% site water 1 100% site water 1							

Chronic Effects of Lehigh Pond 14 Site Water

Chronic Effects of Lehigh Pond 14 Site Water on Selenastrum capricornutum

The IC25 was > 100% site water, resulting in < 1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 14 Site Water on Ceriodaphnia dubia

The survival EC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The reproduction IC25 was 39.6% site water, resulting in 2.5 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 14 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 14 Site Water.								
Test Species Survival EC25 Survival TUc (100/EC25) Growth or Reproduction IC25 Growth or Reproduction IC25 (100/IC25)								
Selenastrum capricornutum			>100% site water	<1				
Ceriodaphnia dubia	>100% site water	<1	39.6% site water	2.5				
Pimephales promelas	>100% site water	<1	>100% site water	<1				

Please note that the NPDES Compliance Summary is attached to this cover letter. If you have any questions regarding the performance and interpretation of these tests, feel free to contact my colleague Stephen Clark or myself at (707) 207-7760.

Regards,

Alison Briden Aquatic Ecotoxicologist

This testing was performed under Lab Order 20780. The test results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report, and only relate to the sample(s) tested. This report shall not be reproduced, except in full, without the written consent of Pacific EcoRisk.

NPDES Compliance Summary

Lehigh Southwest Cement Company
Permanente Facility
Chronic Toxicity for SFBRWQCB Reporting

Testing Facility: Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Chronic Toxicity Test Species:	Selenastrum capricornutum	Sampling Date: March 25, 2013
Test Protocol:	EPA-821-R-02-013	Test Date: March 26, 2013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Cell Growth	

	Current Pond 4A Site Water Test Data.							
Site Water Concentration				Mean A	Mean Algal Cell Density (cells/mL x 10 ⁶)			
	Hardr	ness Blank			6.	09		
	Lab	Control			4.	44		
6.25%					4.75			
12.5%					4.91			
		25%			4.95			
		50%			5.06			
]	100%			4.52			
Current Pond 4A Site Water Test Endpoints.								
Endpoint	NOEC	IC15	IC25	IC40	IC50	TUc	TUc Method	
Cell Growth	100%	>100%	>100%	>100%	>100%	<1	100/IC25	

Current Pond 9 Site Water Test Data.								
Si	Site Water Concentration				Algal Cell Dei	nsity (cel	lls/mL x 10 ⁶)	
	Hardı	ness Blank			6.	09		
	Lab	Control			4.	28		
	6	5.25%			4.	67		
	1	2.5%			5.03			
		25%			5.54			
		50%			5.98			
	-	100%			6.14			
Current Pond 9 Site Water Test Endpoints.								
Endpoint	NOEC	IC15	IC25	IC40	IC50	TUc	TUc Method	
Cell Growth	100%	>100%	>100%	>100%	>100%	<1	100/IC25	

Chronic Toxicity Test Species:	Selenastrum capricornutum	Sampling Date: March 25, 2013
Test Protocol:	EPA-821-R-02-013	Test Date: March 26, 2013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Cell Growth	

	Current Pond 13 Site Water Test Data.							
Site Water Concentration				Mean A	Mean Algal Cell Density (cells/mL x 10 ⁶)			
	Hardı	ness Blank			6.	09		
Lab Control					4.	42		
6.25%					4.83			
	1	2.5%			4.87			
		25%			5.26			
		50%			5.31			
100%					5.39			
Current Pond 13 Site Water Test Endpoints.								
Endpoint	NOEC	IC15	IC25	IC40	IC50	TUc	TUc Method	
Cell Growth	100%	>100%	>100%	>100%	>100%	<1	100/IC25	

	Current Pond 14 Site Water Test Data.							
Sit	Site Water Concentration				Mean Algal Cell Density (cells/mL x 10 ⁶)			
	Н	ardness Bla	ınk		6.	09		
	Lab	Control			4.	46		
	6	5.25%			4.	98		
	1	2.5%			5.15			
		25%			5.44			
		50%			5.75			
	1	100%			5.70			
Current Pond 14 Site Water Test Endpoints.								
Endpoint	NOEC	IC15	IC25	IC40	IC50	TUc	TUc Method	
Cell Growth	100%	>100%	>100%	>100%	>100%	<1	100/IC25	

Chronic Toxicity Test Species:	Ceriodaphnia dubia	Sampling Dates: March 25, 27, and 29, 2013
Test Protocol:	EPA-821-R-02-013	Test Dates: March 26, 2013 - April 1, 3013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Survival, Reproduction	

	Current Pond 4A Site Water Test Data.									
Site Water Concentration			% Survival			Mean Reproduction (# neonates /female)				
Hare	dness Bla	nk		100			10.3	3 *		
La	ab Contro	1		100			28.	3		
	6.25%			100			21.0)*		
	12.5%			90		8.2*				
	25%			40*			5.0			
	50%		0*			3.8				
	100%		0*			0.7				
		Current	Pond 4A Site	Water Test I	Endp	oints.				
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method		
Survival	12.5%	14.5%	16.6%	19.6%		21.6%	6.0	100/EC25		
Reproduction	<6.25%	3.6%	6.1%	8.2%	9.6%		16.5	100/IC25		
Lab Control Survival (after ~96 hrs)				100%						
100% Si	100% Site Water Survival (after ~96 hrs)									

^{*} The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05.

Current Pond 9 Site Water Test Data.									
Site Water Concentration			% Survival			Mean Reproduction (# neonates /female)			
Har	dness Bla	ınk		100			10.3	3 *	
La	ab Contro	1		100			28.	9	
	6.25%			100			32.	0	
	12.5%			100		32.8			
	25%			100		33.5			
	50%			100			33.	3	
	100%		100				27.	3	
		Current	Pond 9 Site	Water Test E	ndpo	oints.			
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method	
Survival	100%	>100%	>100%	>100%	>	100%	<1	100/EC25	
Reproduction	100%	>100%	>100%	>100%	>	>100% <1		100/IC25	
Lab Control Survival (after ~96 hrs)			6 hrs)	100%					
100% Site Water Survival (after ~96 hrs)				100%					

Chronic Toxicity Test Species:	Ceriodaphnia dubia	Sampling Dates: March 25, 27, and 29, 2013
Test Protocol:	EPA-821-R-02-013	Test Dates: March 26, 2013 - April 1, 3013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Survival, Reproduction	

	Current Pond 13 Site Water Test Data.								
Site Water Concentration			% Survival			Mean Reproduction (# neonates /female)			
Hare	dness Bla	nk		100			10.3	} *	
La	ab Contro	1		100			26.	3	
	6.25%			70			15.1	*	
	12.5%			70		7.0*			
25%			10*			5.1			
	50%			10*			3.6		
	100%			0*			0.9		
		Current	Pond 13 Site	Water Test I	Endp	oints.			
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method	
Survival	12.5%	5.0%	6.9%	10.1%		12.7%	14.5	100/EC25	
Reproduction	<6.25%	2.2%	3.7%	5.9%	7.8%		27.3	100/IC25	
Lab Control Survival (after ~96 hrs)				100%					
100% Si	te Water Su	rvival (after ~	-96 hrs)	30%					

^{*} The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05.

	Current Pond 14 Site Water Test Data.								
Site Wate	Site Water Concentration			% Survival			Mean Reproduction (# neonates /female)		
Har	dness Bla	nk		100			10.3	3 *	
La	ab Contro	1		100			27.	4	
	6.25%			100			31.	4	
	12.5%		100			32.1			
	25%		100			28.1			
	50%		100			18.9*			
	100%		80			16.8*			
		Current	Pond 14 Site	Water Test I	Endp	oints.			
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method	
Survival	100%	>100%	>100%	>100%	>	-100%	<1	100/EC25	
Reproduction	25%	31.4%	39.6%	67.1%	>100%		2.5	100/IC25	
Lab C	Lab Control Survival (after ~96 hrs)								
100% Si	te Water Su	ırvival (after ~	~96 hrs)	100%					

^{*} The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05.

Chronic Toxicity Test Species:	Pimephales promelas	Sampling Dates: March 25, 27, and 29, 2013
Test Protocol:	EPA-821-R-02-013	Test Dates: March 26, 2013 - April 2, 3013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Survival, Growth	

	Current Pond 4A Site Water Test Data.									
Site Water Concentration			% 5	% Survival			Mean Biomass (mg)			
Н	ardness B	lank		90.0			0.7	9		
	Lab Cont	rol		95.0			0.7	5		
	6.25%			90.0			0.7	1		
	12.5%			95.0	0.89			9		
	25%			95.0	0.85			5		
	50%			92.5				0.86		
	100%			93.3		0.85				
		Current	Pond 4A Site	Water Test I	Endp	oints.				
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method		
Survival	100%	>100%	>100%	>100%	>	100%	<1	100/EC25		
Growth	100%	>100%	>100%	>100%	>100%		<1	100/IC25		
Lab Control Survival (after ~96 hrs)			100%							
100%	Site Water	Survival (after -	~96 hrs)	100%						

	Current Pond 9 Site Water Test Data.									
Site Water Concentration			% 5	% Survival			Mean Biomass (mg)			
Н	ardness B	lank		90.0			0.7	9		
	Lab Cont	rol		90.0			0.7	0		
	6.25%			92.5			0.7	4		
	12.5%			92.5			0.6	9		
	25%			92.5			0.74			
	50%		95.0			0.85				
	100%		95.0				0.8	7		
		Curren	t Pond 9 Site	Water Test E	ndpo	oints.				
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method		
Survival	100%	>100%	>100%	>100%	>	- 100%	<1	100/EC25		
Growth	100%	>100%	>100%	>100%	>	>100% <1		100/IC25		
Lab	Lab Control Survival (after ~96 hrs)			100%						
100%	Site Water	Survival (after -	~96 hrs)	100%						

Chronic Toxicity Test Species:	Pimephales promelas	Sampling Dates: March 25, 27, and 29, 2013
Test Protocol:	EPA-821-R-02-013	Test Dates: March 26, 2013 - April 2, 3013
Dilution Series:	6.25, 12.5, 25, 50, 100%	
Test Endpoint:	Survival, Growth	

	Current Pond 13 Site Water Test Data.									
Site Wa	Site Water Concentration			% Survival			Mean Biomass (mg)			
Н	ardness B	lank		90.0			0.7	9		
	Lab Cont	rol		95.0			0.9	1		
	6.25%			92.5			0.76	* a		
	12.5%			92.5			0.8	3		
	25%		95.0			0.84				
	50%			92.5		0.87				
	100%		82.5			0.76*				
		Current	Pond 13 Site	Water Test I	Endp	oints.				
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method		
Survival	100%	>100%	>100%	>100%	>	100%	<1	100/EC25		
Growth	50%	90.6%	>100%	>100%	>100%		<1	100/IC25		
Lab Control Survival (after ~96 hrs)			6 hrs)	100%						
100% Site Water Survival (after ~96 hrs			~96 hrs)	100%						

^{*} The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05.

a - The mean response at this test treatment was statistically less than the Control treatment response; however, as there were no toxicologically significant reductions in survival at the higher 12.5% concentration, any reductions at lower test concentrations are not considered toxicologically significant.

Current Pond 14 Site Water Test Data.									
Site Water Concentration				Survival Me			ean Biomass (mg)		
Н	ardness B	lank		90.0			0.7	9	
	Lab Cont	rol		100			0.8	1	
	6.25%			100			0.7	8	
	12.5%			97.5			0.8	4	
25%			90			0.85			
	50%		95.0			0.87			
	100%			100			0.88		
		Current	Pond 14 Site	Water Test I	Endp	oints.			
Endpoint	NOEC	EC15-IC15	EC25-IC25	EC40-IC40	EC	C50-IC50	TUc	TUc Method	
Survival	100%	>100%	>100%	>100%	>	-100%	<1	100/EC25	
Growth	100%	>100%	>100%	>100%	>100%		<1	100/IC25	
Lab Control Survival (after ~96 hrs)			6 hrs)	100%					
100% Site Water Survival (after ~96 hrs)			~96 hrs)	100%					

Acute Toxicity Test Species: Hyalella azteca		Sampling Date: March 25, 2013
Test Protocol: EPA/600/R-99/064		Test Date: March 30, 2013
Test Endpoint: Survival, Growth		

Current Pond 13 Sediment Test Data.					
Site Water Concentrati	ion	% Survival		Mean Dry Weight (mg)	
Lab Control		100			0.22
100%		96.3		0.27	
Current Pond 13 Sediment Test Endpoints.					
Endpoint		NOEC	TUc		TUc Method
Survival		100%	1		100/NOEC
Growth	100%		1		100/NOEC

Evaluation of the Chronic Toxicity of Lehigh Permanente Cement Plant Site Water and Sediment Samples

Samples collected March 25, 27, and 29, 2013

Prepared For

Lehigh Southwest Cement Company 24001 Stevens Creek Boulevard Cupertino, CA 95014

Prepared By

Pacific EcoRisk, Inc. 2250 Cordelia Rd. Fairfield, CA 94534

April 2013



Evaluation of the Chronic Toxicity of Lehigh Permanente Cement Plant Site Water and Sediment Samples

Samples collected March 25, 27, and 29, 2013

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- Appendix N Test Data and Summary of Statistics for the Evaluation of the Acute Toxicity of Lehigh Pond 13 Sediment to *Hyalella azteca*
- Appendix O Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Selenastrum capricornutum
- Appendix P Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Ceriodaphnia dubia
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1. INTRODUCTION

Under contract to the Lehigh Southwest Cement Company, Pacific EcoRisk (PER) conducted an evaluation of the chronic toxicity of Lehigh Southwest Cement Company Permanente Facility (Lehigh) site water and sediment samples. This evaluation consist of performing the following US EPA short-term chronic and acute toxicity tests:

- 96-hour algal growth test with the green alga Selenastrum capricornutum;
- 3-brood (6-8 day) survival and reproduction test with the crustacean Ceriodaphnia dubia;
- 7-day survival and growth test with larval fathead minnows (Pimephales promelas); and
- 10-day acute sediment toxicity test with the amphipod *Hyalella azteca*.

These toxicity tests were conducted on site water samples collected on March 25, 27, and 29, 2013 and a sediment sample collected March 25, 2013. The site water samples were collected from 4 ponds: Pond 4A, quarry discharge water, Pond 9, stormwater and cement plant process water, and Ponds 13 and 14, both of which are Permanente Creek water. The sediment sample was also collected from Pond 13. In order to assess the sensitivity of the organisms to chemical stress, a reference toxicant test was performed concurrently with each test. This report describes the performance and results of these tests.

2. CHRONIC TOXICITY TEST PROCEDURES

The methods used in conducting the chronic toxicity tests followed the guidance established by the following EPA manuals:

- "Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013), and
- "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates, Second Edition" (EPA/600/R-99/064).

2.1 Sample Receipt and Handling

On March 25, 27, and 29, samples of Lehigh Permanente site water samples were collected from 4 sites (designated Pond 4A, Pond 9, Pond 13, and Pond 14) into appropriately cleaned sample containers. These samples were transported, on ice and under chain-of-custody, to the PER testing laboratory in Fairfield, CA. Upon receipt at the testing laboratory, aliquots of each site water sample were collected for analysis of initial water quality characteristics (Tables 1a and 1b), with the remainder of each sample being stored at 0-6°C except when being used to prepare test solutions. On March 25, a sample of Lehigh Permanente sediment was collected from Pond 13 into an appropriately-cleaned sample container. This sample was similarly transported and stored at 0-6°C, and was used to initiate testing within 14 days of collection.



The chain-of-custody records for the collection and delivery of the sediment and site water samples are provided as Appendix A.

	Table 1a. Initial water quality characteristics of the Lehigh site water samples.							
Sample Receipt Date	Sample ID	Temp.	рН	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (µS/cm)	Total Ammonia (mg/L N)
	Pond 4A	18.1*	8.01	9.2	200	757	1350	<1.0
3/25/13	Pond 9	13.0*	7.41	9.7	182	611	1430	<1.0
3/23/13	Pond 13	9.0*	8.10	10.0	159	710	1285	<1.0
	Pond 14	13.7*	8.22	13.3	166	638	1293	<1.0
	Pond 4A	3.8	7.83	9.2	196	733	1335	<1.0
3/27/13	Pond 9	3.5	7.64	9.9	213	641	1464	<1.0
3/2//13	Pond 13	6.6*	7.99	9.7	157	683	1274	<1.0
	Pond 14	8.3*	8.02	10.9	171	651	1315	<1.0
3/29/13	Pond 4A	2.1	7.91	8.8	195	707	1306	<1.0
	Pond 9	1.4	7.44	9.2	214	682	1456	<1.0
	Pond 13	1.0	8.00	9.6	140	657	1233	<1.0
	Pond 14	4.9	8.22	9.2	168	682	1267	<1.0

^{* -} This sample was transported and delivered on the day of sample collection; the temperature blank inside of the sample transport ice chest was measured at ≤6°C.

Table 1b. Collection of the Lehigh sediment sample.				
Sample ID Sediment Sample Collection Date Sample Receipt Date				
Pond 13	3/25/13 (1157)	3/25/13 (1530)		

2.2 Algal Growth Toxicity Testing with Selenastrum capricornutum

The short-term chronic algal toxicity test consists of a \sim 96-hr bioassay in which the green alga *S. capricornutum* is exposed to a series of site water dilutions and the effects on cellular reproduction (= growth) determined. The specific procedures used in these tests are described below.

The Lab Control/diluent for these tests consisted of Type 1 lab water (reverse-osmosis, de-ionized water). Aliquots of the Lab Control water and each of the 4 site waters were spiked with nutrients and then 0.45- μ m filtered before use in the algal test, as per EPA guidelines. The nutrient-amended, filtered Lab Control water was then used to prepare test solutions with each of the 4 site waters (individually) at test treatment concentrations of 6.25%, 12.5%, 25%, 50%, and 100% site water. At the request of the client, an additional Hardness Blank, adjusted to a nominal hardness

of 650 mg/L, was prepared by PER staff by addition of reagent grade chemicals to Type 1 water (reverse-osmosis, de-ionized water) as per EPA guidance (EPA 1994, 2002). On the day prior to the initiation of testing, the Lab water was filtered to remove any insoluble particulate material. Routine water quality characteristics (pH, dissolved oxygen [D.O.], and conductivity) were measured on these test solutions prior to their use in the test.

There were 4 replicates for each test treatment, each replicate consisting of a 250-mL glass Erlenmeyer flask containing 100 mL of test solution; an additional replicate was established at each test treatment in order to measure the test solution water quality characteristics during the test and at test termination. Each flask was inoculated to an initial cell density of 10,000 cells/mL of *S. capricornutum* from an ongoing laboratory culture that is maintained in log growth phase. These flasks were loosely-capped and randomly positioned within a temperature-controlled room at 25°C, under continuous cool-white fluorescent illumination. Each replicate flask was gently shaken a minimum of 3 times daily.

After 96 (±2) hrs exposure, the algal cell density in each replicate flask was determined by spectrophotometric analysis. Due to the observation of 'plated' cells (i.e., algal cells that had become attached to the inside surface of the test replicate flasks), the algal cell density was also determined after re-suspension of the algal cells via scraping of the test replicate flask surface with a silicon spatula. The resulting cell density data were analyzed to evaluate any impairment of algal growth caused by each site water sample. All statistical analyses were performed using the CETIS® statistical software (TidePool Scientific, McKinleyville, CA).

2.2.1 Reference Toxicant Testing of the Selenastrum capricornutum

In order to assess the sensitivity of the *S. capricornutum* to toxic stress, a reference toxicant test was performed concurrently with the site water tests. The reference toxicant test was performed similarly to the site water test except that test solutions consisted of Lab Control water spiked with NaCl at concentrations of 0.125, 0.25, 0.5, 1, and 2 g/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., IC50); all statistical analyses were performed using the CETIS® software. These response endpoints were then compared to the 'typical response' range established by the mean $\pm 2 \text{ SD}$ of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.

2.3 Survival and Reproduction Toxicity Testing with Ceriodaphnia dubia

The short-term chronic *C. dubia* test consists of exposing individual females to a series of site water dilutions for the length of time it takes for the Control treatment females to produce 3 broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in these tests are described below.



The Lab Control/diluent water for these tests was modified EPA synthetic moderately-hard water. The Lab Control water was used to prepare test solutions with each of the 4 site waters (individually) at test treatment concentrations of 6.25%, 12.5%, 25%, 50%, and 100% site water. At the request of the client, an additional Hardness Blank, to a nominal hardness of 650 mg/L, was prepared by PER staff by addition of reagent grade chemicals to Type 1 water (reverse-osmosis, de-ionized water) as per EPA guidance (EPA 1994, 2002). On the day prior to the initiation of testing, the Lab water was filtered to remove any insoluble particulate material. For each test treatment, a 200 mL aliquot of test solution was amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll-Trout Food (YCT) to provide food for the test organisms "New" water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in this test.

There were 10 replicates for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. This "3-brood" test was initiated by allocating one neonate (<24 hrs old, and within 8 hrs of age) *C. dubia*, obtained from in-house laboratory cultures, into each replicate cup. The test replicate cups were placed into a temperature-controlled room at 25°C, under cool white fluorescent lighting on a 16L:8D photoperiod.

Each day of the test, fresh test solutions were prepared and characterized as before, and a "new" set of replicate cups was prepared. The original test replicate cups were examined, with surviving "original" individual organisms being transferred to the corresponding new cup. The contents of each of the remaining "old" replicate cups was carefully examined and the number of neonate offspring produced by each original organism was determined, after which the "old" water quality characteristics (pH, D.O., and conductivity) were measured for the old media from one randomly-selected replicate at each treatment.

After it was determined that \geq 60% of the *C. dubia* in the Lab Control treatment had produced their third brood of offspring, the tests were terminated. The resulting survival and reproduction (number of offspring) data were analyzed to evaluate any impairment caused by the site water samples; all statistical analyses were performed using the CETIS® statistical software.

2.3.1 Reference Toxicant Testing of the Ceriodaphnia dubia

In order to assess the sensitivity of the test organisms to toxic stress, a reference toxicant test was performed concurrently with the site water tests. The reference toxicant test was performed similarly to the site water tests except that test solutions consisted of Lab Control water spiked with NaCl at test concentrations of 500, 1000, 1500, 2000, and 2500 mg/L. The resulting test response data were statistically analyzed to determine key dose-response point estimates (e.g., EC50); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the 'typical response' ranges established by the mean ± 2 SD of the point estimates generated by the most recent previous reference toxicant tests performed by this lab.



2.4 Survival and Growth Toxicity Testing with Larval Fathead Minnows

The short-term chronic fathead minnow test consists of exposing larval fish to a series of site water dilutions for 7 days, after which effects on survival and growth are evaluated. The specific procedures used in this test are described below.

The larval fathead minnows used in these tests were obtained from a commercial supplier (Aquatox, Hot Springs, AR); upon receipt at the testing lab, the larval fish were maintained in aerated tanks of US EPA moderately-hard water at 25°C, and were fed brine shrimp nauplii *ad libitum*.

The Lab Control/diluent water for these tests was EPA synthetic moderately-hard water. The Lab Control water was used to prepare test solutions with each of the 4 site waters (individually) at test treatment concentrations of 6.25%, 12.5%, 25%, 50%, and 100% site water. At the request of the client, an additional Hardness Blank, adjusted to a nominal hardness of 650 mg/L, was prepared by PER staff by addition of reagent grade chemicals to Type 1 water (reverse-osmosis, de-ionized water) as per EPA guidance (EPA 1994, 2002). On the day prior to the initiation of testing, the Lab water was filtered to remove any insoluble particulate material. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in the test.

There were 4 replicates for each test treatment, each replicate consisting of 400 mL of test solution in a 600-mL glass beaker. The test was initiated by randomly allocating 10 larval fathead minnows (<48 hrs old) into each replicate. The replicate beakers were placed in a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod. The test fish were fed brine shrimp nauplii twice daily.

Each day of the tests, fresh test solutions were prepared for each treatment, and water quality characteristics were determined as before. The replicate beakers were examined, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live fish in each replicate was determined and then approximately 80% of the old test media in each beaker was carefully poured out and replaced with fresh test solution. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water that had been discarded from one randomly-selected replicate at each treatment.

After 7 days exposure, the tests were terminated and the number of live fish in each replicate beaker was recorded. The fish from each replicate were then carefully euthanized in methanol, rinsed in de-ionized water, and transferred to a pre-dried and pre-tared weighing pan. These fish were then dried at 100°C for ~24 hrs and re-weighed to determine the total weight of fish in each replicate; the total weight was then divided by the initial number of fish per replicate (n=10) to determine the "biomass value". The resulting survival and growth ("biomass value") data were

analyzed to evaluate any reductions caused by the site waters; all statistical analyses were performed using the CETIS® statistical software.

2.4.1 Reference Toxicant Testing of the Larval Fathead Minnows

In order to assess the sensitivity of the fish to toxic stress, a reference toxicant test was performed concurrently with the site water tests. The reference toxicant test was performed similarly to the site water test, except that test solutions consisted of "Lab Control" media spiked with NaCl at test concentrations of 0.75, 1.5, 3, 6, and 9 g/L. The resulting test response data were analyzed to determine key dose-response point estimates (e.g., EC50); all statistical analyses were made using the CETIS® software. These response endpoints were then compared to the 'typical response' ranges established by the mean ± 2 SD of the point estimates generated by the 20 most recent previous reference toxicant tests performed by this lab.

2.5 Survival and Growth Toxicity Testing of Ambient Sediment with Hyalella azteca

The freshwater sediment toxicity test with *Hyalella azteca* consists of exposing the amphipods to the sediment for 10 days, after which effects on survival and growth are evaluated. The specific procedures used in this test are described below.

The *Hyalella azteca* used in this test were obtained from a commercial supplier (Chesapeake Cultures, Hayes, VA). Upon receipt at the laboratory, the amphipods were placed into HDPE tanks containing SAM-5S water at 23°C, and were fed the alga *Selenastrum capricornutum* and Yeast-Cerophyll®-Trout (YCT) food amended with *Spirulina*.

The sediment sample was tested at the 100% concentration only. The Control treatment sediment consisted of a composite of reference site sediments that has been maintained under culture at the PER lab for >3 months. There were 8 replicates for each test treatment. Each replicate container consisted of a 300 mL tall-form glass beaker with a 3 cm ribbon of 540 μ m mesh NITEX attached to the top of the beaker with silicone sealant. The sediment sample was homogenized immediately prior to introduction of the sediment into the test replicates. Approximately 100 mL of sediment was then loaded into each of the test replicate containers. Each of the test replicates was carefully filled with clean overlying SAM-5S water. The test replicates with sediment and clean overlying water were established 24 hrs prior to the introduction of the amphipods.

After this initial 24 hr period, the overlying water in each replicate was flushed with one volume of fresh control water (approximately 150 mL). For each test treatment, a small aliquot of the renewed overlying water was then collected from each of the 8 replicates and composited for measurement of "initial" water quality characteristics (pH, dissolved oxygen [D.O.], conductivity, alkalinity, hardness, and total ammonia). Then, ten 10-11 day-old amphipods were randomly allocated into each replicate, followed by the addition of 1.0 mL of YCT food. The test replicates were then returned to the temperature-controlled room. At the time of test initiation for

each set of tests, 8 replicates of 10 randomly-selected organisms were collected, dried, and weighed (described below) to determine the mean dry weight of the test organisms at test initiation.

Each day, for the following 9 days, each test replicate was examined for the presence of any dead amphipods. A small aliquot of the overlying water in each of the 8 replicates was then collected and composited as before for measurement of "old" D.O., after which each replicate was flushed with one volume of fresh water. Another small aliquot of the overlying water in each of the 8 replicates was then collected and composited as before for measurement of "new" D.O., after which each replicate was fed 1.0 mL of YCT, and then replaced within the temperature-controlled room. The D.O. dropped below 2.5 mg/L in the Pond 13 sediment during testing. As per EPA guidelines, the sample was aerated.

After 10 days exposure, an aliquot of overlying water was collected from each replicate and composited for analysis of the "final" water quality characteristics. The sediments in each replicate container were then carefully sorted and sieved and the number of surviving amphipods determined. The surviving organisms were euthanized in methanol and transferred to small pretared weighing pans, which were placed into a drying oven at 100°C. After drying for ~24 hrs, the pans were transferred to a desiccator to cool, and then weighed to the nearest 0.01 mg to determine the mean dry weight per surviving organism for each replicate. The resulting survival and growth (mean dry weight) data were then analyzed to evaluate any impairment due to the sediment; all statistical analyses were performed using the CETIS® statistical package (TidePool Scientific, McKinleyville, CA).

2.5.1 Reference Toxicant Testing of the Hyalella azteca

In order to assess the sensitivity of the H. azteca test organisms to toxic stress, a concurrent reference toxicant test was performed. The reference toxicant test was performed as a 96-hr exposure to Control water spiked with KCl at test concentrations of 0, 0.1, 0.2, 0.4, 0.8 and 1.6 g/L. The resulting survival data were statistically analyzed to determine key dose-response point estimates (e.g., EC50); all statistical analyses were made using the CETIS® software. This response endpoint was then compared to the 'typical response' range established by the mean ± 2 SD of the point estimates generated by the 20 most recent previous reference toxicant tests performed by this lab.



3. RESULTS

3.1 Effects of Lehigh Site Water on Selenastrum capricornutum

3.1.1 Effects of Lehigh Pond 4A Site Water on Selenastrum capricornutum

The results of this test are summarized below in Table 2. There was a mean final algal cell density of 4,440,000 cells/mL at the Lab Water Control treatment. The IC25 point estimate was >100% site water, resulting in <1 survival TUc (where TUc = 100/IC25).

The test data and summary of statistical analyses for this test are presented in Appendix B.

Table 2. Effects of Lehigh Pond 4A site water on Selenastrum capricornutum growth.				
Test Site Water Treatment	Mean Algal Cell Density (cells/mL x 10 ⁶)			
Hardness Blank	6.09			
Lab Water Control	4.44			
6.25%	4.75			
12.5%	4.91			
25%	4.95			
50%	5.06			
100%	4.52			
Summary of	Statistics			
No Observable Effect Concentration (NOEC) =	100% site water			
TUc (where TUc = 100/NOEC) =	1.0			
Growth IC25 =	>100% site water			
TUc (where TUc = 100/ IC25) =	<1			
Growth IC50 =	>100% site water			
TUc (where TUc = 100/ IC50) =	<1			
Test PMSD =	4.6			

3.1.2 Effects of Lehigh Pond 9 Site Water on Selenastrum capricornutum

The results of this test are summarized below in Table 3. There was a mean final algal cell density of 4,280,000 cells/mL at the Lab Water Control treatment. The IC25 point estimate was >100% site water, resulting in <1 survival TUc (where TUc = 100/IC25).

The test data and summary of statistical analyses for this test are presented in Appendix C.

Table 3. Effects of Lehigh Pond 9 site water on Selenastrum capricornutum growth.				
Test Site Water Treatment Mean Algal Cell Density (cells/mL)				
Hardness Blank	6.09			
Lab Water Control	4.28			
6.25%	4.67			
12.5%	5.03			
25%	5.54			
50%	5.98			
100%	6.14			
Summary of Statistics				
No Observable Effect Concentration (NOEC) =	100% site water			
TUc (where TUc = 100/NOEC) =	1.0			
Growth IC25 =	>100% site water			
TUc (where TUc = 100/ IC25) =	<1			
Growth IC50 =	>100% site water			
TUc (where TUc = 100/ IC50) =	<1			
Test PMSD =	6.3			

3.1.3 Effects of Lehigh Pond 13 Site Water on Selenastrum capricornutum

The results of this test are summarized below in Table 4. There was a mean final algal cell density of 4,420,000 cells/mL at the Lab Water Control treatment. The IC25 point estimate was >100% site water, resulting in <1 survival TUc (where TUc = 100/IC25).

The test data and summary of statistical analyses for this test are presented in Appendix D.

Table 4. Effects of Lehigh Pond 13 site water on Selenastrum capricornutum growth.				
Test Site Water Treatment Mean Algal Cell Density (cell				
Hardness Blank	6.09			
Lab Water Control	4.42			
6.25%	4.83			
12.5%	4.87			
25%	5.26			
50%	5.31			
100%	5.39			
Summary of Statistics				
No Observable Effect Concentration (NOEC) =	100% site water			
TUc (where TUc = 100/NOEC) =	1.0			
Growth IC25 =	>100% site water			
TUc (where TUc = $100/IC25$) =	<1			
Growth IC50 =	>100% site water			
TUc (where TUc = 100/ IC50) =	<1			
Test PMSD =	6.7			

3.1.4 Effects of Lehigh Pond 14 Site Water on Selenastrum capricornutum

The results of this test are summarized below in Table 5. There was a mean final algal cell density of 4,460,000 cells/mL at the Lab Water Control treatment. The IC25 point estimate was >100% site water, resulting in <1 survival TUc (where TUc = 100/IC25).

The test data and summary of statistical analyses for this test are presented in Appendix E.

Table 5. Effects of Lehigh Pond 14 site water on Selenastrum capricornutum growth.				
Test Site Water Treatment	Mean Algal Cell Density (cells/mL x 10 ⁶)			
Hardness Blank	6.09			
Lab Water Control	4.46			
6.25%	4.98			
12.5%	5.15			
25%	5.44			
50%	5.75			
100%	5.70			
Summary of Statistics				
No Observable Effect Concentration (NOEC) =	100% site water			
TUc (where TUc = 100/NOEC) =	1.0			
Growth IC25 =	>100% site water			
TUc (where TUc = $100/IC25$) =	<1			
Growth IC50 =	>100% site water			
TUc (where TUc = $100/IC50$) =	<1			
Test PMSD =	8.9			

3.2 Effects of Lehigh Site Water on Ceriodaphnia dubia

3.2.1 Effects of Lehigh Pond 4A Site Water on Ceriodaphnia dubia

The results of this test are summarized below in Table 6. There was 100% survival in the Lab Water Control treatment. The EC25 was 16.6% site water, resulting in 6.0 survival TUc (where TUc = 100/ EC25).

There was a mean of 28.3 offspring per female at the Lab Water Control treatment. The IC25 was 6.1% site water, resulting in 16.5 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix F.

Table 6. Effects of Lehigh Pond 4A site water on Ceriodaphnia dubia survival and						
rep	production.					
Site Water Treatment	Mean % Survival	Mean Reproduction				
Site water Heatment	Wican 70 Survivar	(# neonates /female)				
Hardness Blank	100	10.3*				
Lab Control	100	28.3				
6.25%	100	21.0*				
12.5%	90	8.2*				
25%	40*	5.0				
50%	0*	3.8				
100%	0*	0.7				
Summary	Summary of Key Statistics					
NOEC =	12.5% site water	<6.25% site water				
TUc (TUc = 100/NOEC) =	8	>16				
Survival EC25 or Reproduction IC25 =	16.6% site water	6.1% site water				
TUc (TUc = 100/EC25 or 100/IC25) =	6.0	16.5				
Survival EC50 or Reproduction IC50 =	21.6% site water	9.6% site water				
TUc (TUc = 100/EC50 or 100/IC50) =	4.6	10.4				
Test PMSD		15.0%				

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).



3.2.2 Effects of Lehigh Pond 9 Site Water on Ceriodaphnia dubia

The results of this test are summarized below in Table 7. There was 100% survival in the Lab Water Control treatment. Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

There was a mean of 28.9 offspring per female at the Lab Water Control treatment. The IC25 was >100% site water, resulting in <1 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix G.

Table 7. Effects of Lehigh Pond 9 site water on Ceriodaphnia dubia survival and reproduction.				
Site Water Treatment	Maar Of Carrieral	Mean Reproduction		
Site water Treatment	Mean % Survival	(# neonates /female)		
Hardness Blank	100	10.3*		
Lab Control	100	28.9		
6.25%	100	32.0		
12.5%	100	32.8		
25%	100	33.5		
50%	100	33.3		
100%	100	27.3		
Summary	Summary of Key Statistics			
NOEC = 100% site water 100% site wa				
TUc (TUc = 100/NOEC) =	1	1		
Survival EC25 or Reproduction IC25 =	>100% site water ^a	>100% site water		
TUc (TUc = $100/EC_{25}$ or $100/IC_{25}$) =	<1	<1		
Survival EC50 or Reproduction IC50 =	>100% site water ^a	>100% site water		
TUc (TUc = $100/EC_{50}$ or $100/IC_{50}$) =	<1	<1		
Test PMSD		11.1%		

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).



a -Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.

3.2.3 Effects of Lehigh Pond 13 Site Water on Ceriodaphnia dubia

The results of this test are summarized below in Table 8. There was 100% survival in the Lab Water Control treatment. The EC25 was 6.9% site water, resulting in 14.5 survival TUc (where TUc = 100/ EC25).

There was a mean of 26.3 offspring per female at the Lab Water Control treatment. The IC25 was 3.7% site water, resulting in 27.3 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix H.

Table 8. Effects of Lehigh Pond 13 site water on <i>Ceriodaphnia dubia</i> survival and reproduction.		
Site Water Treatment	Mean % Survival	Mean Reproduction
Site water Treatment	Wicali 70 Survival	(# neonates /female)
Hardness Blank	100	10.3*
Lab Control	100	26.3
6.25%	70	15.1*
12.5%	70	7.0*
25%	10*	5.1
50%	10*	3.6
100%	0*	0.9
Summary	of Key Statistics	
NOEC =	12.5% site water	<6.25% site water
TUc (TUc = 100/NOEC) =	8	>16
Survival EC25 or Reproduction IC25 =	6.9% site water	3.7% site water
TUc (TUc = 100/EC25 or 100/IC25) =	14.5	27.3
Survival EC50 or Reproduction IC50 =	12.7% site water	7.8% site water
TUc (TUc = 100/EC50 or 100/IC50) =	7.9	12.9
Test PMSD		19.6%

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).

3.2.4 Effects of Lehigh Pond 14 Site Water on Ceriodaphnia dubia

The results of this test are summarized below in Table 9. There was 100% survival in the Lab Water Control treatment. Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

There was a mean of 27.4 offspring per female at the Lab Water Control treatment. The IC25 was 39.6% site water, resulting in 2.5 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix I.

Table 9. Effects of Lehigh Pond 14 site water on <i>Ceriodaphnia dubia</i> survival and reproduction.		
Cita Water Treatment	M @ C : 1	Mean Reproduction
Site Water Treatment	Mean % Survival	(# neonates /female)
Hardness Blank	100	10.3*
Lab Control	100	27.4
6.25%	100	31.4
12.5%	100	32.1
25%	100	28.1
50%	100	18.9*
100%	80	16.8*
Summary	of Key Statistics	
NOEC =	100% site water	25% site water
TUc (TUc = 100/NOEC) =	1	4
Survival EC25 or Reproduction IC25 =	>100% site water ^a	39.6% site water
TUc (TUc = $100/EC_{25}$ or $100/IC_{25}$) =	<1	2.5
Survival EC50 or Reproduction IC50 =	>100% site water ^a	>100% site water
TUc (TUc = 100/EC50 or 100/IC50) =	<1	<1
Test PMSD		22.4%

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).



a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.

3.3 Effects of Lehigh Site Water on Fathead Minnows

3.3.1 Effects of Lehigh Pond 4A Site Water on Fathead Minnows

The results of this test are summarized below in Table 10. There was 95% survival at the Lab Water Control treatment. Due to the absence of significant mortalities, the EC25 and EC50 could not be calculated, but can both be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

The mean fish biomass value was 0.75 mg at the Lab Water Control treatment. The IC25 was >100% site water, resulting in <1 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix J.

Table 10. Effects of Lehigh Pond 4A site water on fathead minnow survival and growth.		
Test Site Water Treatment	Mean % Survival	Mean Fish
		Biomass Value (mg)
Hardness Blank	90.0	0.79
Lab Water Control	95.0	0.75
6.25%	90.0	0.71
12.5%	95.0	0.89
25%	95.0	0.85
50%	92.5	0.86
100%	72.5 ^b	0.67
Summary of Sta	itistics	
NOEC =	100% site water	100% site water
TUc (TUc = 100/NOEC) =	1.0	1.0
Survival EC25 or Growth IC25 =	>100% site water ^a	>100% site water
TUc (TUc = 100/EC25 or 100/IC25) =	<1.0	<1.0
Survival EC50 or Growth IC50 =	>100% site water ^a	>100% site water
TUc (TUc = 100/EC50 or 100/IC50) =	<1.0	<1.0
Test PMSD	33.0%	35.7%

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.



b - Pathogen-related mortality (PRM) was observed in fish from this treatment; the increased variability due to PRM resulted in increased variability at this treatment, exceeding the 90th percentile PMSD of 30% for this test.

3.3.2 Effects of Lehigh Pond 9 Site Water on Fathead Minnows

The results of this test are summarized below in Table 11. There was 90% survival at the Lab Water Control treatment. Due to the absence of significant mortalities, the EC25 and EC50 could not be calculated, but can both be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

The mean fish biomass value was 0.70 mg at the Lab Water Control treatment. The IC25 was >100% site water, resulting in <1 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix K.

Table 11. Effects of Lehigh Pond 9 site water on fathead minnow survival and growth.			
Test Site Water Treatment	Mean % Survival	Mean Fish Biomass Value (mg)	
Hardness Blank	90.0	0.79	
Lab Water Control	90.0	0.70	
6.25%	92.5	0.74	
12.5%	92.5	0.69	
25%	92.5	0.74	
50%	95.0	0.85	
100%	95.0	0.87	
Summary of Statistics			
NOEC =	100% site water	100% site water	
TUc (TUc = 100/NOEC) =	1.0	1.0	
Survival EC25 or Growth IC25 =	>100% site water ^a	>100% site water	
TUc (TUc = 100/EC25 or 100/IC25) =	<1.0	<1.0	
Survival EC50 or Growth IC50 =	>100% site water ^a	>100% site water	
TUc (TUc = 100/EC50 or 100/IC50) =	<1.0	<1.0	
Test PMSD	21.0%	16.7%	

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.



3.3.3 Effects of Lehigh Pond 13 Site Water on Fathead Minnows

The results of this test are summarized below in Table 12. There was 95% survival at the Lab Water Control treatment. Due to the absence of significant mortalities, the EC25 and EC50 could not be calculated, but can both be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

The mean fish biomass value was 0.91 mg at the Lab Water Control treatment. The IC25 was >100% site water, resulting in <1 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix L.

Table 12. Effects of Lehigh Pond 13 site water on fathead minnow survival and growth.				
Test Site Water Treatment	Mean % Survival	Mean Fish Biomass Value (mg)		
Hardness Blank	90.0	0.79		
Lab Water Control	95.0	0.91		
6.25%	92.5	0.76*b		
12.5%	92.5	0.83		
25%	95.0	0.84		
50%	92.5	0.87		
100%	82.5	0.76*		
Summary of Sta	Summary of Statistics			
NOEC =	100% site water	50% site water		
TUc (TUc = 100/NOEC) =	1.0	2.0		
Survival EC25 or Growth IC25 =	>100% site water ^a	>100% site water		
TUc (TUc = 100/EC25 or 100/IC25) =	<1.0	<1.0		
Survival EC50 or Growth IC50 =	>100% site water ^a	>100% site water		
TUc (TUc = 100/EC50 or 100/IC50) =	<1.0	<1.0		
Test PMSD	13.9%	12.0%		

^{*} The response at this test treatment was significantly less than the Lab Control treatment response at p<0.05.



a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.

b - The mean response at this test treatment was statistically less than the Control treatment response. There was an interrupted concentration-response (i.e., non-significant effects bracketed by significant effects) for the growth endpoint at the 6.25% site water treatment. Given that there were no procedural errors during testing and the test sensitivity was acceptable, the response at the 6.25% treatment was considered anomalous and the NOEC was determined as the next highest concentration that was not significantly different from the Lab Control (i.e., 50% site water in this case).

3.3.4 Effects of Lehigh Pond 14 Site Water on Fathead Minnows

The results of this test are summarized below in Table 13. There was 100% survival at the Lab Water Control treatment. Due to the absence of significant mortalities, the EC25 and EC50 could not be calculated, but can both be assumed to be >100% site water, resulting in <1 survival TUc (where TUc = 100/ EC25).

The mean fish biomass value was 0.81 mg at the Lab Water Control treatment. The IC25 was >100% site water, resulting in <1 survival TUc (where TUc = 100/ IC25).

The test data and summary of statistical analyses for this test are presented in Appendix M.

Table 13. Effects of Lehigh Pond 14 site water on fathead minnow survival and growth.			
Test Site Water Treatment	Mean % Survival	Mean Fish Biomass Value (mg)	
Hardness Blank	90.0	0.79	
Lab Water Control	100	0.81	
6.25%	100	0.78	
12.5%	97.5	0.84	
25%	90.0	0.85	
50%	95.0	0.87	
100%	100	0.88	
Summary of Statistics			
NOEC =	100% site water	100% site water	
TUc (TUc = 100/NOEC) =	1.0	1.0	
Survival EC25 or Growth IC25 =	>100% site water ^a	>100% site water	
TUc (TUc = 100/EC25 or 100/IC25) =	<1.0	<1.0	
Survival EC50 or Growth IC50 =	>100% site water ^a	>100% site water	
TUc (TUc = 100/EC50 or 100/IC50) =	<1.0	<1.0	
Test PMSD	10.0%	13.6%	

a - Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be determined by inspection to be >100% site water.



3.4 Effects of the Lehigh Sediment on Hyalella azteca

3.4.1 Effects of the Lehigh Pond 13 Sediment on Hyalella azteca

The results for this test are summarized below in Table 14. There was 100% survival and a mean dry weight of 0.22 mg at the Lab Water Control treatment. There was no significant reduction in $H. \ azteca$ survival or growth in the Lehigh Pond 13 sediment sample. The survival and growth NOEC were both 100% site water, resulting in 1 TUc (where TUc = 100/NOEC).

The test data and summary of statistical analyses for this test are presented in Appendix N.

Table 14. Effects of Lehigh Pond 13 sediment on <i>Hyalella azteca</i> survival and growth.			
Test Initiation Date (Time)	Treatment/Sample ID	Mean % Survival	Mean Dry Weight (mg)
3/30/13 (0940)	Lab Control	100	0.22
3/30/13 (0940)	Pond 13 (100%)	96.3	0.27
Summary of Key Statistics			
NOEC =		100	1
TUc (TUc = 100/NOEC) =		100	1
Test I	PMSD	5.2%	9.9%

4. AQUATIC TOXICITY DATA QUALITY CONTROL

Four QC measures were assessed during the toxicity testing:

- Maintenance of acceptable test conditions;
- Negative Control testing;
- Positive Control (reference toxicant) testing; and
- Concentration Response Relationship assessment.

4.1 Maintenance of Acceptable Test Conditions

All test conditions (pH, D.O., temperature, etc.) were within acceptable limits for these tests. All analyses were performed according to laboratory Standard Operating Procedures.

4.2 Negative Control Testing

The responses at the Lab Control treatments were acceptable.

4.3 Positive Control Testing

4.3.1 Reference Toxicant Toxicity to Selenastrum capricornutum

The results of this test are summarized below in Table 15. There was a mean of 3,910,000 cells/mL at the Lab Control treatment. The IC50 was 1.73 g/L NaCl. This IC50 is consistent with the "typical response" range established by the reference toxicant test database for this species, indicating that these organisms were responding to toxic stress in a typical fashion.

The test data and summary of statistical analyses for this test are presented in Appendix O.

Table 15. Reference toxicant testing: Effects of	Table 15. Reference toxicant testing: Effects of NaCl on Selenastrum capricornutum.										
NaCl Treatment (g/L)	Mean Algal Cell Density (cells/mL x 10 ⁶)										
Lab Water Control	3.91										
0.125	4.05										
0.25	3.57										
0.5	3.11*										
1	2.65*										
2	1.75*										
Summary of S	tatistics										
No Observable Effect Concentration (NOEC) =	0.25 g/L NaCl										
Lowest Observable Effect Concentration (LOEC) =	0.5 g/L NaCl										
Algal Growth IC50 =	1.73 g/L NaCl										

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).



4.3.2 Reference Toxicant Toxicity to Ceriodaphnia dubia

The results of this test are summarized below in Table 16. There was 100% survival and a mean of 27.6 offspring in the Lab Control treatment. The survival EC50 was 2300 mg/L NaCl, and the reproduction IC50 was 1080 mg/L NaCl. These reference toxicant test results are consistent with the "typical response" ranges established by the reference toxicant test database for this species, indicating that these test organisms were responding to toxicant stress in a typical and consistent fashion.

The test data and summary of statistical analyses for this test are presented in Appendix P.

Table 16. Reference toxicant testing: effects of NaCl on Ceriodaphnia dubia.										
NaCl Treatment (mg/L)	Mean % Survival	Mean Reproduction (# neonates/female)								
Lab Control	100	27.6								
500	100	15.7*								
1000	100	15.1*								
1500	100	6.6*								
2000	100	1.5*								
2500	20*	0								
Summ	ary of Statistics									
NOEC =	2000 mg/L NaCl	<500 mg/L NaCl								
LOEC =	2500 mg/L NaCl	500 mg/L NaCl								
Survival EC50 or Reproduction IC50 =	2300 mg/L NaCl	1080 mg/L NaCl								

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05)

4.3.3 Reference Toxicant Toxicity to Fathead Minnows

The results of this test are summarized below in Table 17. There was 100% survival and a mean biomass value of 0.76 mg at the Lab Control treatment. The survival EC50 was 3.28 g/L NaCl and the growth IC50 was 2.76 g/L NaCl. These reference toxicant test results are consistent with the "typical response" ranges established by the reference toxicant test database for this species, indicating that these test organisms were responding to toxicant stress in a typical and consistent fashion.

The test data and summary of statistics for this test are attached in Appendix Q.

Table 17. Reference toxicant testing: effects of NaCl on fathead minnows.										
NaCl Treatment (g/L)	Mean % Survival	Mean Fish Biomass								
NaCi Ticatificit (g/L)	Wicali 70 Survival	Value (mg)								
Lab Control	100	0.76								
0.75	90	0.77								
1.5	90	0.75								
3	50*	0.31								
6	20*	0.11								
9	0*	-								
Summary of St	atistics									
NOEC =	1.5 g/L NaCl	1.5 g/L NaCl								
LOEC =	3 g/L NaCl	>1.5 g/L NaCl								
Survival EC50 or Growth IC50 =	3.28 g/L NaCl	2.76 g/L NaCl								

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).



4.3.4 Reference Toxicant Toxicity to Hyalella azteca

The results of this test are presented in Table 18. There was 100% survival in the Control treatment; the EC50 was 0.57 g/L KCl. These reference toxicant test results are consistent with the "typical response" ranges established by the reference toxicant test database for this species, indicating that these test organisms were responding to toxicant stress in a typical and consistent fashion.

The test data and summary of statistical analyses for this test are presented in Appendix R.

Table 18. Reference toxicant testing: Ef	fects of KCl on Hyalella azteca.							
KCl Treatment (g/L)	Mean % Survival							
Control	100							
0.1	100							
0.2	100							
0.4	100							
0.8	0*							
1.6	0*							
Summary of S	tatistics							
No Observable Effect Concentration (NOEC) =	0.4 g/L KCl							
Lowest Observable Effect Concentration (LOEC) =	0.8 g/L KCl							
Survival EC50 =	0.57 g/L KCl							

^{*} The response at this test treatment was significantly less than the Lab Control treatment response (p < 0.05).

4.4 Concentration Response Relationships

There were valid concentration-response relationships for both the site water and reference toxicant tests (EPA821-B-00-004). There was an interrupted concentration-response (i.e., non-significant effects bracketed by significant effects) for the growth endpoint of the Pond 13 fathead minnow site water test. Given that there were no procedural errors during testing and the test sensitivity was acceptable, the response at the 6.25% treatment was considered anomalous and the NOEC was determined as the next highest concentration that was not significantly different from the Lab Control (i.e., 50% site water in this case). This response curve is considered valid based upon a review of the data following EPA guidance.

5. SUMMARY AND CONCLUSIONS

Chronic Effects of Lehigh Pond 4A Site Water

Chronic Effects of Lehigh Pond 4A Site Water on Selenastrum capricornutum

The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 4A Site Water on Ceriodaphnia dubia

The survival EC25 was 16.6% site water, resulting in 6.0 TUc (where TUc = 100/ EC25). The reproduction IC25 was 6.1% site water, resulting in 16.5 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 4A Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 4A Site Water.												
Test Species	Survival EC25	Survival TUc (100/EC25)	Growth or Reproduction IC25	Growth or Reproduction TUc (100/IC25)								
Selenastrum capricornutum			>100% site water	<1								
Ceriodaphnia dubia	16.6% site water	6.0	6.1% site water	16.5								
Pimephales promelas	>100% site water	<1	>100% site water	<1								

Chronic Effects of Lehigh Pond 9 Site Water

Chronic Effects of Lehigh Pond 9 Site Water on Selenastrum capricornutum

The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 9 Site Water on Ceriodaphnia dubia

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The reproduction IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).



Chronic Effects of Lehigh Pond 9 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 9 Site Water.												
Test Species	Survival EC25	Survival TUc (100/EC25)	Growth or Reproduction IC25	Growth or Reproduction TUc (100/IC25)								
Selenastrum capricornutum			>100% site water	<1								
Ceriodaphnia dubia	>100% site water	<1	>100% site water	<1								
Pimephales promelas	>100% site water	<1	>100% site water	<1								

Chronic Effects of Lehigh Pond 13 Site Water

Chronic Effects of Lehigh Pond 13 Site Water on Selenastrum capricornutum

The IC25 was > 100% site water, resulting in < 1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 13 Site Water on Ceriodaphnia dubia

The survival EC25 was 6.9% site water, resulting in 14.5 TUc (where TUc = 100/ EC25). The reproduction IC25 was 3.7% site water, resulting in 27.3 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 13 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 13 Site Water.											
Test Species	Survival EC25	Survival TUc (100/EC25)	Growth or Reproduction IC25	Growth or Reproduction TUc (100/IC25)							
Selenastrum capricornutum			>100% site water	<1							
Ceriodaphnia dubia	6.9% site water	14.5	3.7% site water	27.3							
Pimephales promelas	>100% site water	<1	>100% site water	<1							



Chronic Toxicity of Lehigh Pond 13 Sediment to Hyalella azteca

There was <u>no</u> significant reduction in *H. azteca* survival or growth in the Lehigh Pond 13 sediment sample; the NOEC was 100% site water for both endpoints, resulting in 1 TUc (where TUc = 100/NOEC).

Chronic Effects of Lehigh Pond 13 Sediment.										
Test Species	Survival NOEC	Survival TUc (100/NOEC)	Growth NOEC	Growth TUc (100/NOEC)						
Hyalella azteca	100% site water	1	100% site water	1						

Chronic Effects of Lehigh Pond 14 Site Water

Chronic Effects of Lehigh Pond 14 Site Water on Selenastrum capricornutum

The IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/IC25).

Chronic Effects of Lehigh Pond 14 Site Water on Ceriodaphnia dubia

The survival EC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The reproduction IC25 was 39.6% site water, resulting in 2.5 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 14 Site Water on Fathead Minnows

Due to the absence of significant mortalities, the EC point estimates could not be calculated, but can be assumed to be >100% site water, resulting in <1 TUc (where TUc = 100/ EC25). The growth IC25 was >100% site water, resulting in <1 TUc (where TUc = 100/ IC25).

Chronic Effects of Lehigh Pond 14 Site Water.											
Test Species	Survival EC25	Survival TUc (100/EC25)	Growth or Reproduction IC25	Growth or Reproduction TUc (100/IC25)							
Selenastrum capricornutum			>100% site water	<1							
Ceriodaphnia dubia	>100% site water	<1	39.6% site water	2.5							
Pimephales promelas	>100% site water	<1	>100% site water	<1							



Appendix A

Chain-of-Custody Records for the Collection and Delivery of the Lehigh Site Water and Sediment Samples



Pacific EcoRisk 2250 Cordelia Rd., Fairfield, CA 94534 (707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Results To:	Robertson-E	Bryan, I	nc		Invoice To:	Lehigh	Southwest Cement Co											
Address:	9888 Kent S	Street			Address:	P.O. Bo	x 660140		-	<u>a</u>								
	Elk Grove,	CA 956	524			Dallas, TX 75266			an 2	<u>≥</u> 0	10-Day Acute Hyalalla azteca sediment test, EPA 100.1				- 1			
			1						riva 100	<u>12</u> 00	100				- 1			
Phone:	916 405-89	11			Phone:	(925) 24	14-6570	capricomutum PA 1003.0	Sn	A 1	PA							
Attn:	Brant Jorge	nson				Greg Kı		ge A	ibia F		Hys St. E							
	brant@robe					Greg.Kr	napp@hanson.biz	# # #	a du	E S	tte e							
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Pond 4A		3/25/13	11:20	FW	- Grab	2	- Poly	X	Х	X					+	4		
Pond 13		3/25/13	1157	FW/S20	Grab	2/4	Poly/Glass	×	Х	Х	X				\bot	4		
Pond 9	3	3/25/13	1220	FW /Sed-	Grab	2	Poly	, X	Х	Х	14/1							
Pond 14		3/25/13	1255	FW /Sed	Grab	2	Poly	х	Х	х	44					\perp		
Pond 13	3	3/24/3	1157	Sed	Grab	1	2L Glass				0							
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Pacific EcoRisk 2250 Cordelia Rd., Fairfield, CA 94534 (707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Results To:	Robertsor	n-Bryan, I	nc		Invoice To:	Lehigh	Southwest Cement Co	O. REQUESTED ANALYSIS										
Address:	9888 Ken	t Street					x 660140	-	<u></u>								T	
	Elk Grove	e, CA 95	624			Dallas,	ΓX 75266	al and	Fathead Minnow Larval Survival and Growth, EPA 1000.0									
Phone:	916 405-8	 8911			Phone:	(925) 24	14-6570	Suriv A 10	7 al 8									
	Brant Jorg				+	Greg Kı	napp						- 1					
	brant@ro		oryan.con	<u>n</u>	E-mail:	j 0	Ş €											
roject Name:	Lehigh So	outhwest (Cement -	Permanent	e Creek			Ding on b	₽ S							-		
P.O.#/Ref:									nd (1					
Client Sam	nle ID	Sample	Sample	Sample	Grab/		Container	Seg.	ath									
	ipio ib	Date	Time	Matrix*	Comp	Number							_				_	
Pond 4A		3/27/13	1100	FW	Grab	2	Poly Cube	Х	X				\Box				\perp	
Pond 13		3/27/13	1139	FW	Grab	2	Poly Cube	Х	X								1	
Pond 9	1211				Grab	2	Poly Cube	×	х									
Pond 14					Grab	2	Poly Cube	х	х									
Samples colle	cted by: B	. Jorgens	on					Paluku										
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Renewal samp	oles.					RELIQU	INSHED BY:				RECEIVED BY:							
						Signature:					Sign	ature:						
						Print:					Print							
						Organiz	ation:				Orga	nizati	on:					
						Date: Time:					Date: Time:							

Pacific EcoRisk 2250 Cordelia Rd., Fairfield, CA 94534 (707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Results To:	Robertso	n-Bryan, I	nc		Invoice To:		REQUESTED ANALYSIS											
Address:	9888 Ker	nt Street			Address:	P.O. Bo	x 660140	and	<u>a</u>									
	Elk Grov	e, CA 950	524			Dallas,	Dallas, TX 75266											
								Suriva	<u> </u>	읭								
Phone:	916 405-	8911			Phone:	(925) 24	44-6570]S	Za Za	A T								
Attn:	Brant Jor	genson			Attn:	Greg K	napp	Ceriodapnia dubia	٢	삐			9					
E-mail:	brant@ro	bertson-l	oryan.con	<u>n</u>	E-mail:	Greg.Ki	napp@hanson.biz	a of	Reproduction, EPA 1002.0 Fathead Minnow Larval Survival	뒱								
Project Name:	Lehigh S	outhwest (Cement -	Permanent	e Creek			jūd	ğ	<u>G</u>								
P.O.#/Ref:								gg	ead	2								
Client Sar	nala ID	Sample	Sample	Sample	Grab/ Container				지불									
Client Sar	npie iD	Date	Time	Matrix*	Comp	Number		1		7								
Pond 4A		3/29/13	1215	FW	Grab	2	Poly Cube)	()	١					igsqcup	Ш		
Pond 13		3/29/13	1755	FW	Grab	2	Poly Cube		()	<u> </u>								
Pond 9		3/29/13	1330	FW	Grab	2	Poly Cube	, >	()	<								
Pond 14	ond 14 3/29/13 13.50 FW		FW	Grab	2	Poly Cube)	()	<									
								T										
Samples colle	ected by:	David	Walt	e/	<u> </u>		TO THE STATE OF TH		1111		3 17		154 (10)					
Comments/Sp			0000			RELIQU	INSHED BY:				REC	EIVE	D BY	/ :				
·						Signatu	re: David CSL	, le	_		Sigr	natur	e:-2	~	d	2	ス	
Perform concu	rent refere	nce toxicar	nt tests.			Print:	David Walter				Prin	t: <i>f</i>	ER	^	1Qr	ton	9W	Hic
							cation: Golder As		int				tion:					-
						Date: 3-29-13 Time: 142										ime:	14	<u>2</u>
Renewal sam	ples.			RELIQU		70-		ate: 63.29./3 **Time: /9-0 ECEIVED BY:										
	•			Signature:					Signature:									
						Print:					Print:							
						Organiz	ation:				Org	aniza	tion:					
						Date:		Ti	me:		Date: Time:							

Appendix B

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 4A Site Water to Selenastrum capricornutum



CETIS Summary Report

Report Date: Test Code:

02 Apr-13 09:05 (p 1 of 1)

51256 | 19-8979-1167

									Test	Code:			51256 19	9-8979-116
Algal Growth	Test												Pacif	ic EcoRis
Batch ID: Start Date: Ending Date: Duration:	12-7549-3796 26 Mar-13 12:30 30 Mar-13 14:00 4d 2h	0 Pro	st Type: otocol: ecies: urce:	EP/ Sel	l Growth A-821-R-02- enastrum ca House Cultur	pricornutum	1		Anal Dilue Brine Age:	ent: e:	Labo	on Briden oratory Wate Applicable	er	
Daration.									Ago.				<u> </u>	
Sample ID:	06-5579-9366		de:		nd 4A				Clier			gh Permane	ente	
•	25 Mar-13 11:20		terial:		uent				Proje	ect:	2078	30		
	: 25 Mar-13 15:30		urce:		nigh Perman	ente								
Sample Age:	25h (18.1 °C)		tion:	Por	nd 4A									
Comparison	Summary													
Analysis ID	Endpoint		NOEL	Ť,	LOEL	TOEL	PMSD	TU	15	Meth	od			
11-6567-7653		•			>0		9.55%					ance t Two	•	
02-6880-6776	96h Cell Density	y-with EDT	A 100		>100	NA	4.59%	1		Dunn	ett M	ultiple Com	parison Te	st
Point Estimat	te Summary													
Analysis ID	Endpoint		Level	1	%	95% LCL	95% UCL	TU		Meth	od			
15-9050-9814	96h Cell Density	y-with EDT	IC5		90.2	72.8	N/A	1.10	8	Linea	r Inte	rpolation (I	CPIN)	
			IC10		>100	N/A	N/A	<1						
			IC15		>100	N/A	N/A	<1						
			IC20		>100	N/A	N/A	<1						
			IC25		>100	N/A	N/A	<1						
			IC40 IC50		>100 >100	N/A N/A	N/A N/A	<1 <1						
			1000		>100	IN/A	19/74							
	sity-with EDTA S	ummary												
C-%	Control Type	Count	Mean		95% LCL		Min	Max		Std E		Std Dev	CV%	%Effect
0	Hardness Blank	•	6.09E		5.94E+6	6.24E+6	5.64E+6	6.61		2.01E		4.03E+5	6.61%	0.0%
0	Lab Water Contr		4.44E		4.38E+6	4.51E+6	4.32E+6	4.69		8.48E		1.70E+5	3.82%	27.0%
6.25		4	4.75E		4.71E+6	4.80E+6	4.60E+6	4.85		5.57E		1.11E+5	2.34%	21.9%
12.5 25		4	4.91E 4.95E		4.87E+6 4.91E+6	4.95E+6 5.00E+6	4.76E+6 4.84E+6	5.01 5.11		5.40E 5.81E		1.08E+5 1.16E+5	2.2% 2.35%	19.4% 18.6%
50		4	5.06E		5.03E+6	5.00E+6	4.04E+6 4.97E+6	5.19		4.48E		8.95E+4	1.77%	16.9%
100		4	4.52E		4.48E+6	4.57E+6	4.37E+6	4.62		5.46E		1.09E+5	2.41%	25.7%
96h Cell Dens	sity-with EDTA De	etail												
C-%	Control Type	Rep 1	Rep 2	2	Rep 3	Rep 4								
0	Hardness Blank		6.14E			6.61E+6								
	Lab Water Contr		4.41E			4.32E+6								
6.25		4.80E+6	4.60E		_	4.85E+6								
12.5		4.76E+6	5.01E			4.91E+6								
25		4.84E+6	4.92E			4.94E+6								
50		5.19E+6	5.04E		4.97E+6	5.03E+6								
100		4.57E+6	4.37E		4.53E+6	4.62E+6								
			∟											

Report Date:

02 Apr-13 08:57 (p 1 of 2)

e: 51256 I 19-8979-1167

							Test	Code:		51256 1	9-8979-116
Algal Growth	h Test					<u>.</u>				Paci	fic EcoRisl
Analysis ID:	02-6880-6776		•	h Cell Densit	-			IS Version:	CETISv1.	8.5	
Analyzed:	02 Apr-13 8:56	Aı	nalysis: Pa	arametric-Cor	ntrol vs Trea	itments	Offic	ial Results	Yes		
Data Transfo		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Untransforme	ed 	NA	C > T	NA	NA		4.59%	100	>100	NA	1
Dunnett Mult	tiple Comparison	Test									•
Control	vs C-%		Test Sta	t Critical	MSD DF	P-Value	P-Type	Decision(a:5%)		
Lab Water Co	ontrol 6.25		-3.67	2.41	2E+05 6	1.0000	CDF	Non-Signi	ficant Effect		
	12.5		-5.48	2.41	2E+05 6	1.0000	CDF	Non-Signi	ficant Effect		
	25		-6.01	2.41	2E+05 6	1.0000	CDF	Non-Signi	ficant Effect		
	50		-7.27	2.41	2E+05 6	1.0000	CDF	Non-Signi	ficant Effect		
	100		-0.95	2.41	2E+05 6	0.9802	CDF	Non-Signi	ficant Effect		
ANOVA Table	e			-							
Source	Sum Squa		Mean Sq		DF	F Stat	P-Value	Decision(
Between	1.215326E		2.430653		5	16.9	<0.0001	Significant	Effect		
Error	2.588584E		14381020	0000	18						
Total	1.474185E	+12			23		.,				
Distributiona	ıl Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bartlett Ed	quality of	Variance	1.33	15.1	0.9322	Equal Var	iances			
Distribution	Shapiro-V	Vilk W No	rmality	0.967	0.884	0.5899	Normal D	istribution			
96h Cell Den	sity-with EDTA S	ummary	`								
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	4	4.44E+6	4.17E+6	4.71E+6	4380000	4.32E+6	4.69E+6	8.48E+4	3.82%	0.0%
6.25		4	4.75E+6	4.58E+6	4.93E+6	4780000	4.60E+6	4.85E+6	5.57E+4	2.34%	-7.0%
12.5		4	4.91E+6	4.74E+6	5.08E+6	4930000	4.76E+6	5.01E+6	5.40E+4	2.2%	-10.5%
25		4	4.95E+6	4.77E+6	5.14E+6	4930000	4.84E+6	5.11E+6	5.81E+4	2.35%	-11.5%
50		4	5.06E+6	4.92E+6	5.20E+6	5040000	4.97E+6	5.19E+6	4.48E+4	1.77%	-13.9%
100		4	4.52E+6	4.35E+6	4.70E+6	4550000	4.37E+6	4.62E+6	5.46E+4	2.41%	-1.81%
Graphics											
6000000						2.5E+05					•
						2.0E+05					
5000000		-0-	•	H		2.32,763				×	
EDTA	•					1.5E+05		1			
4000000	100000000000000000000000000000000000000			Reject Null	79	E 1.0E+05		F.		· •	
ensity					Centered	nafo.			7.		
96h Cell Density-with EDTA					రి	5.0E+04 E					
196						0.0E+00			<u> </u>		
2000000						-5.0E+04					
1000000						-1.0E+05					
1000000						-1.5E+05	• •				

-1.0

6.25

12.5

C-%

CETIS Analytical Report

Report Date:

02 Apr-13 08:57 (p 1 of 1)

Test Code:

51256 | 19-8979-1167

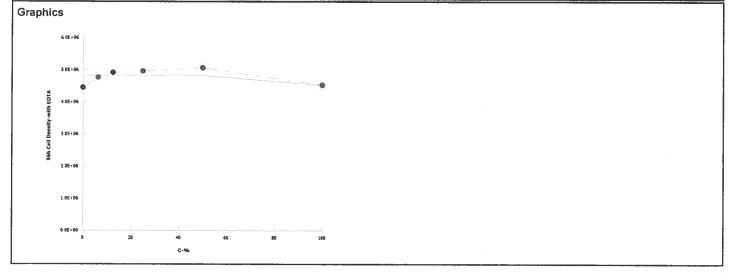
Algal Growth Test

Analysis ID: 15-9050-9814 Endpoint: 96h Cell Density-with EDTA CETIS Version: CETISv1.8.5

Analyzed: 02 Apr-13 8:56 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method	
Linear		Linear	7950	24	200	Yes	Two-Point Interpolation	
Point E	stimates							
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	90.2	72.8	N/A	1.108	NA	1.373		
IC10	>100	N/A	N/A	<1	NA	NA		
IC15	>100	N/A	N/A	<1	NA	NA		
IC20	>100	N/A	N/A	<1	NA	NA		
IC25	>100	N/A	N/A	<1	NA	NA		
IC40	>100	N/A	N/A	<1	NA	NA		
IC50	>100	N/A	N/A	<1	NA	NA		

96h Cell	Density-with EDTA S	ummary			Ca	Iculated Va	riate			
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	4.44E+6	4.32E+6	4.69E+6	8.48E+4	1.70E+5	3.82%	0.0%	
6.25		4	4.75E+6	4.60E+6	4.85E+6	5.57E+4	1.11E+5	2.34%	-7.0%	
12.5		4	4.91E+6	4.76E+6	5.01E+6	5.40E+4	1.08E+5	2.2%	-10.5%	
25		4	4.95E+6	4.84E+6	5.11E+6	5.81E+4	1.16E+5	2.35%	-11.5%	
50		4	5.06E+6	4.97E+6	5.19E+6	4.48E+4	8.95E+4	1.77%	-13.9%	
100		4	4.52E+6	4.37E+6	4.62E+6	5.46E+4	1.09E+5	2.41%	-1.81%	



Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client:	Lehigh Permanente	Test ID #:	51256	Test Date:	3126113	
Test Material:	Pond 4A	Project #:	20780	Control/Diluent:	Lab Water	
				Shelf Zone #:	R451	

Test Treatment	Temp (°C)	рН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	24.6	7.50	8.7	(VS/CIII)	Date: 3/26/13
6.25 % Effluent	24.6	7.80	6.8	195	Sample ID: 31333
12.5 % Effluent	24.6	7,77	9.1	292	Test Solution Prep:
25 %Effluent	24.6	7.86	9,0	470	New WQ: VO CL
50 % Effluent	24.6	7.96	9.1	787	Innoculation Time: 2!30
100% Effluent	24.6	7.98	9.8	1369	Innoculation Signoff:
Meter ID:	60A	PHIB	ROUG	Ecol	
Lab Water Control	24.9	7.80			Date: 3/27/13
6.25 % Effluent	24.9	7.72			WQ Time: 1228
12.5 % Effluent	24.9	7.90			WQ Signoff:
25 %Effluent	24.9	8.04			
50 % Effluent	24.9	8.22			
100% Effluent	24.9	8.33			
Meter ID:	60A	pH18			
Lab Water Control	24.9	8.84			Date: 3/28/13
6.25 % Effluent	24.9	8.71			WQTime: 0855
12.5 % Effluent	24.9	8.60			WQ Signoff: RA
25 %Effluent	24.9	8.55			
50 % Effluent	24.9	8.51			
100% Effluent	24.9	8.34			
Meter ID:	60A	8H18			
Lab Water Control	25.0	9.77			Date: 3-29-13
6.25 % Effluent	25.0	4.85			Date: 3-29-13 WQTime: 0930
12.5 % Effluent	25.0	9.72			WQ Signoff:
25 %Effluent	25.0	9.49			
50 % Effluent	25.0	9.05			
100% Effluent	25.0	8.57			
Meter ID:	604	PHIA			
Lab Water Control	25.6	9.91	12.4	99	Date: 3-30 - 13
6.25 % Effluent	25.6	10.02	12.7	195	Termination Time: 1400
12.5 % Effluent	25.6	10.13	12.8	298	Termination Signoff:
25 %Effluent	7.5.6	9.81	13.5	413	WQ Time:
50 % Effluent	Z 5.6	9.64	14.5	660	WQ Signoff: UL
100% Effluent	25.6	9.07	14.0	1134	
Meter ID:	60 A	PHIC	RDOT	E-604	

Initial Test Conditions	ſ	Alkalinity	Π	/ Hardness	Light Intensity (ftc)
	4	204	V	759	399.0

Selenastrum capricornutum Cell Density Enumeration Data

Client:	Lehigh Permanente	Initial Count:	10,000 cells/mL
Test Material:	Pond 4A	Enumerating Scientist:	KP
Test Start Date: 3/au/1	3 Start Time:	Project #:	20780
Test End Date: 3 3011	3 End Time: 1406	Test ID #:	51256

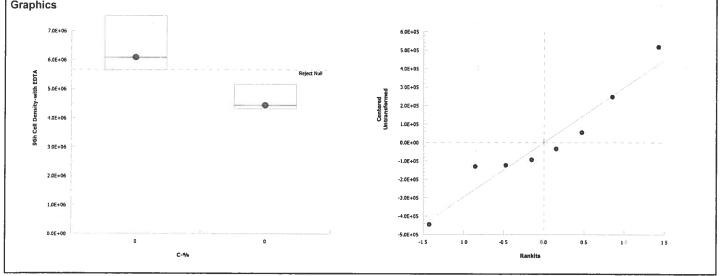
Treatment			Cell Density (cells/ml x	10°)	
rreatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water	4.6922	4.4108	4.3513	4.3212	4.4439
6.25%	4.7963	4.5959	4.7723	4.8547	4.7548
12.5%	4.7598	5.0095	4.9599	4.9051	4.9086
25%	4.8374	4.9249	5.1146	4.9377	4.9537
50%	5.1866	5.0449	4.9747	5.0344	5.0525
100%	4.5682	4.3704	4.5347	4.6243	4.5244
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
other issues of concern.	4.44	3.82	3/30/13	18:20	d

Report Date:

02 Apr-13 08:57 (p 2 of 2)

Test Code: 51256 | 19-8979-1167

							Test	Code:		51256 1	9-8979-116
Algal Growth Test			8							Paci	fic EcoRis
•	6567-7653 Apr-13 8:56		•	Cell Densit	•	\		S Version:		.8.5	
Data Transform		Zeta	Alt Hyp	Trials	Seed		PMSD	Test Res	ult		-
Untransformed		NA	C > T	NA	NA		9.55%	Passes 9	6h cell dens	ity-with edi	а
Equal Variance t	wo-Sample	Test									
Control vs	Control		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	(a:5%)		
Lab Water Control	Hardness	Blank	-7.53	1.94	4E+05 6	0.9999	CDF	Non-Sign	ificant Effect	t	
ANOVA Table		<u> </u>									
Source	Sum Squa	res	Mean Squ	are	DF	F Stat	P-Value	Decision	(a:5%)		
Between	5.406294E	+12	5.406294E	+12	1	56.7	0.0003	Significan	t Effect		
Error	5.723999E	+11	953999900	000	6			•			
Total	5.978694E	+12			7						
Distributional Tes	ts										
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)			
Variances	Variance F	Ratio F		5.63	47.5	0.1898	Equal Var	iances			
Distribution	Shapiro-W	ilk W No	rmality	0.948	0.645	0.6899	Normal Di	stribution			
96h Cell Density-v	ith EDTA Su	ımmary							······································		
	trol Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec
C-% Con			4.445.0	4.17E+6	4.71E+6	5170000	4.32E+6	4.69E+6	8.48E+4	3.82%	0.0%
	Water Contr	4	4.44E+6	4.17L10	7.7 12.0					0.0270	0.070



Analyst: #B QA:

Selenastrum capricornutum Algal Toxicity Test Data Sheet

Client:	Lehigh Permanente	Sample:	Ha	rdness Control	
Test Start Date:	3/26/13	Test ID #:	51256	Project #:	20780
Test End Date:	3/36/13	Control/Diluent:		Lab Water	

Test Treatment	Temp (°C)	рН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Hardness Control	24.6	7.60	A - 806	2485	Date: 3/26/13
					Sample ID #: 31337
					Test Solution Prep:
					New WQ:
					Inoculation Time:
Meter ID	60A	DH 16	ROUG	Ecob	Innoculation Signoff:
Hardness Control	24.9	8.71			Date: 3/27/13
					WQ Time: 1224
Meter ID	60A	0418			WQ Signoff:
Hardness Control	24.9	8.75			Date: 3/28/13
					wq Time: 0855
Meter ID	60A	PH18			WQ Signoff: RA
Hardness Control	2.5.0	4.16			Date: 3.29.13
					WQ Time: つりつり
Meter ID	GOA	PHIA			WQ Signoff: DH
Hardness Control	25.6	9.42	14.4	2419	Date: 3-30-13
					WQ Time: WY 1000
Meter ID	60 A	P1+16	RDOT	E 604	WQ Signoff:

Initial Count: 10,000 cells/mL Termination Time: 1900 Enumeration Scientist	⁸ _ Kp
---	-------------------

Treatment		Mean Cell Density					
Treatment	Rep A	Rep В	Rep C	Rep D		(cells/mL x 10 ⁶)	
Hardness Control	5.9587	6.1437	5.6434	6.6062		0.0880.2	
This datashee	This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of			% CV	Date:	Time:	Signoff:
	concern.		4.44	3.82	3/30/13	18:30	\angle

Initial Test Conditions		Alkalinity		Hardness	Light Intensity (ftc)
Antial Test Conditions	√	318	√	662	399.0

Appendix C

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 9 Site Water to Selenastrum capricornutum



CETIS Summary Report

Report Date: Test Code:

02 Apr-13 09:25 (p 1 of 1) 51257 | 16-8981-6805

Algal Growth Test Pacific EcoRisk Test Type: Cell Growth Batch ID: 04-9764-2012 Analyst: Alison Briden Start Date: 26 Mar-13 12:30 Protocol: EPA-821-R-02-013 (2002) Diluent: Laboratory Water Ending Date: 30 Mar-13 12:45 Species: Selenastrum capricornutum Brine: Not Applicable **Duration:** 4d Oh Source: In-House Culture Age: Sample ID: 11-1413-8011 Code: Pond 9 Lehigh Permanente Client: Sample Date: 25 Mar-13 12:20 Material: Effluent Project: 20780 Receive Date: 25 Mar-13 15:30 Source: Lehigh Permanente Sample Age: 24h (13 °C) Station: Pond 9 Comparison Summary Analysis ID **Endpoint NOEL** LOEL **TOEL PMSD** TU Method 15-9172-0857 96h Cell Density-with EDTA 0 >0 9.47% Equal Variance t Two-Sample Test 00-3157-7747 96h Cell Density-with EDTA 100 >100 NA 6.33% 1 **Dunnett Multiple Comparison Test Point Estimate Summary** Analysis ID **Endpoint** Level % 95% LCL 95% UCL TU Method Linear Interpolation (ICPIN) 11-3892-9483 96h Cell Density-with EDT IC5 >100 N/A N/A <1 IC10 >100 N/A N/A <1 IC15 >100 N/A N/A <1 IC20 >100 N/A N/A <1 IC25 >100 N/A N/A <1 **IC40** >100 N/A N/A <1 **IC50** >100 N/A N/A <1 96h Cell Density-with EDTA Summary C-% **Control Type** Count 95% UCL Mean 95% LCL Min Max Std Err Std Dev CV% %Effect 0 Hardness Blank 4 6.61E+6 6.09E+6 5.94E+6 6.24E+6 5.64E+6 2.01E+5 4.03E+5 6.61% 0.0% 0 Lab Water Contr 4 4.32E+6 4.28E+6 4.24E+6 4.14E+6 4.40E+6 5.48E+4 1.10E+5 2.56% 29.7% 6.25 4 4.67E+6 4.60E+6 4.73E+6 4.52E+6 4.90E+6 9.01E+4 1.80E+5 3.86% 23.3% 12.5 4 5.03E+6 4.98E+6 5.09E+6 4.91E+6 5.25E+6 7.46E+4 1.49E+5 2.96% 17.3% 25 4 5.50E+6 5.54E+6 9.01% 5.58E+6 5.41E+6 5.66E+6 5.28E+4 1.06E+5 1.91% 50 4 5.98E+6 5.93E+6 6.03E+6 5.83E+6 6.11E+6 7.17E+4 1.43E+5 2.4% 1.78% 100 6.14E+6 6.06E+6 6.23E+6 5.93E+6 6.45E+6 2.31E+5 3.76% -0.94% 1.15E+5 96h Cell Density-with EDTA Detail C-% **Control Type** Rep 1 Rep 2 Rep 3 Rep 4 0 Hardness Blank 5.96E+6 6.14E+6 5.64E+6 6.61E+6 0 Lab Water Contr 4.40E+6 4.14E+6 4.32E+6 4.26E+6 6.25 4.72E+6 4.53E+6 4.90E+6 4.52E+6 12.5 5.25E+6 4.95E+6 4.91E+6 5.03E+6

25

50

100

5.50E+6

5.83E+6

6.45E+6

5.41E+6

5.88E+6

6.18E+6

5.66E+6

6.11E+6

6.01E+6

5.58E+6

6.09E+6

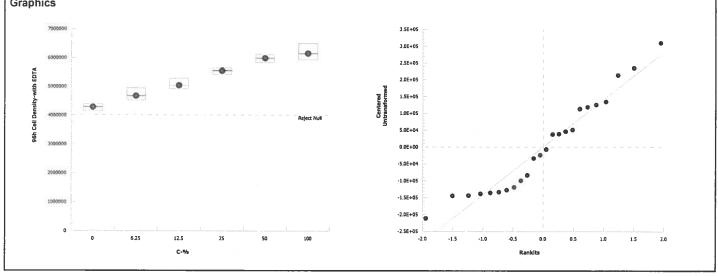
5.93E+6

Report Date:

02 Apr-13 09:27 (p 1 of 2)

Test Code: 51257 | 16-8981-6805

Data Transform									Test	Code:		51257 1	6-8981-680
Analyzed O2 Apr-13 9:12	Algal Growth	Test										Paci	fic EcoRis
Unitransformed NA C > T NA NA 6.33% 100 >100 NA 1	Analysis ID: Analyzed:				•		•					.8.5	
Dunnett Multiple Comparison Test Control vs C-% Test Stat Critical MSD DF P-Value P-Type Decision(α:5%)	Data Transfori	m		Zeta	Alt Hyp	Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Control vs C-% Test Stat Critical MSD DF P-Value P-Type Decision(α:5%)	Untransformed			NA	C > T	NA	NA		6.33%	100	>100	NA	1
Lab Water Control 6.25	Dunnett Multip	ple C	omparison	Test									
12.5	Control	vs	C-%		Test St	at Critical	MSD DF	P-Value	P-Type	Decision	(a:5%)		
25	Lab Water Con	trol	6.25		-3.44	2.41	3E+05 6	1.0000	CDF	Non-Sign	ificant Effect		
50			12.5		-6.7	2.41	3E+05 6	1.0000	CDF	Non-Sign	ificant Effect		
Non-Significant Effect			25		-11.2	2.41	3E+05 6	1.0000	CDF	Non-Sign	ificant Effect	:	
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)			50		-15.1	2.41	3E+05 6	1.0000	CDF	Non-Sign	ificant Effect	:	
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)			100		-16.6	2.41	3E+05 6	1.0000	CDF	Non-Sign	ificant Effect		
Between 1.096904E+13 2.193807E+12 5 86.7 <0.0001 Significant Effect Error 4.553195E+11 25295530000 18 Total 1.142436E+13 23 Distributional Tests Attribute Test Test Stat Critical P-Value Decision(α:1%) Variances Bartlett Equality of Variance 2.39 15.1 0.7926 Equal Variances Distribution Shapiro-Wilk W Normality 0.938 0.884 0.1494 Normal Distribution 96h Cell Density-with EDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 4.45E+6 4.290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% 6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 255 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.25E+6 7.46E+4 2.96% -17.6% 255 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	ANOVA Table												
Error	Source		Sum Squa	res	Mean S	quare	DF	F Stat	P-Value	Decision	(a:5%)		
Total 1.142436E+13 23 23 25 25 25 25 26 26 26 26	Between		1.096904E	+13	2.19380	7E+12	5	86.7	<0.0001	Significan	t Effect		
Test Stat Critical P-Value Decision(α:1%)	Error		4.553195E	+11	252955	30000	18						
Attribute Test Test Stat Critical P-Value Decision(α:1%) Variances Bartlett Equality of Variance 2.39 15.1 0.7926 Equal Variances Distribution Shapiro-Wilk W Normality 0.938 0.884 0.1494 Normal Distribution 96h Cell Density-with EDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 0 Lab Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% 6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 5.37E+6 5.71E+6 5990000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17	Total		1.142436E	+13			23						
Variances Bartlett Equality of Variance 2.39 15.1 0.7926 Equal Variances Distribution Shapiro-Wilk W Normality 0.938 0.884 0.1494 Normal Distribution 96h Cell Density-with EDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 0 Lab Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% 6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.2	Distributional	Tests	3										
Distribution Shapiro-Wilk W Normality 0.938 0.884 0.1494 Normal Distribution 96h Cell Density-with EDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 0 Lab Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% 6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 <t< td=""><td>Attribute</td><td></td><td>Test</td><td></td><td></td><td>Test Stat</td><td>Critical</td><td>P-Value</td><td>Decision</td><td>(α:1%)</td><td></td><td></td><td></td></t<>	Attribute		Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
96h Cell Density-with EDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect Description Lab Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% End Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% End Water Contr 4 4.28E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% End Water Contr 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% End Water Contr 4 4.67E+6 5.37E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% End Water Contr 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% End Water Contr 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% End Water Contr 4 4.28E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	Variances		Bartlett Ed	quality o	of Variance	2.39	15.1	0.7926	Equal Var	iances			
C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 0 Lab Water Contr 4 4.28E+6 4.11E+6 4.45E+6 4290000 4.14E+6 4.40E+6 5.48E+4 2.56% 0.0% 6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	Distribution		Shapiro-V	Vilk W 1	Normality	0.938	0.884	0.1494	Normal D	istribution			
Lab Water Contr 4	96h Cell Densi	ity-wi	th EDTA S	ummar	у								
6.25 4 4.67E+6 4.38E+6 4.95E+6 4620000 4.52E+6 4.90E+6 9.01E+4 3.86% -9.05% 12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	C-%	Cont	rol Type	Count	t Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effec
12.5 4 5.03E+6 4.80E+6 5.27E+6 4990000 4.91E+6 5.25E+6 7.46E+4 2.96% -17.6% 25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	0	Lab V	Vater Contr	4	4.28E+6	3 4.11E+6	4.45E+6	4290000	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
25 4 5.54E+6 5.37E+6 5.71E+6 5540000 5.41E+6 5.66E+6 5.28E+4 1.91% -29.4% 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	6.25			4	4.67E+6	6 4.38E+6	4.95E+6	4620000	4.52E+6	4.90E+6	9.01E+4	3.86%	-9.05%
50 4 5.98E+6 5.75E+6 6.21E+6 5990000 5.83E+6 6.11E+6 7.17E+4 2.4% -39.7% 100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	12.5			4	5.03E+6	4.80E+6	5.27E+6	4990000	4.91E+6	5.25E+6	7.46E+4	2.96%	-17.6%
100 4 6.14E+6 5.78E+6 6.51E+6 6100000 5.93E+6 6.45E+6 1.15E+5 3.76% -43.6%	25			4	5.54E+6	5.37E+6	5.71E+6	5540000	5.41E+6	5.66E+6	5.28E+4	1.91%	-29.4%
	50			4	5.98E+6	5.75E+6	6.21E+6	5990000	5.83E+6	6.11E+6	7.17E+4	2.4%	-39.7%
Graphics	100			4	6.14E+6	5.78E+6	6.51E+6	6100000	5.93E+6	6.45E+6	1.15E+5	3.76%	-43.6%
	Graphics												





CETIS Analytical Report

Report Date:

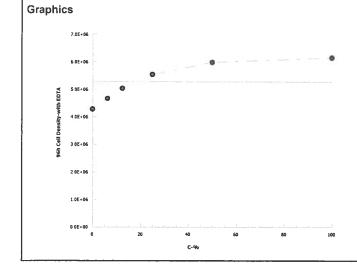
02 Apr-13 09:25 (p 1 of 1) 51257 | 16-8981-6805

Test Code:

Algal Growth	Algal Growth Test								
Analysis ID:	11-3892-9483 02 Apr-13 9:25	Endpoint: Analysis:	96h Cell Density-with EDTA	CETIS Version:					
Analyzed:	02 Apr-13 9.25	Allalysis:	Linear Interpolation (ICPIN)	Official Results:	TES				

Linear	Interpola	tion Options							
X Trans	sform	Y Transform	See	d	Res	amples	Exp 95% CL	Method	
Linear		Linear	943	464	200		Yes	Two-Point Interpolation	
Point E	stimates								
Level	%	95% LCL	95% UCL	TU		95% LCL	95% UCL		
IC5	>100	N/A	N/A	<1		NA	NA		
IC10	>100	N/A	N/A	<1		NA	NA		
IC15	>100	N/A	N/A	<1		NA	NA		
IC20	>100	N/A	N/A	<1		NA	NA		
IC25	>100	N/A	N/A	<1		NA	NA		
IC40	>100	N/A	N/A	<1		NA	NA		
IC50	>100	N/A	N/A	<1		NA	NA		

96h Cell Density-with EDTA Summary Calculated Variate								· -		
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	4.28E+6	4.14E+6	4.40E+6	5.48E+4	1.10E+5	2.56%	0.0%	
6.25		4	4.67E+6	4.52E+6	4.90E+6	9.01E+4	1.80E+5	3.86%	-9.05%	
12.5		4	5.03E+6	4.91E+6	5.25E+6	7.46E+4	1.49E+5	2.96%	-17.6%	
25		4	5.54E+6	5.41E+6	5.66E+6	5.28E+4	1.06E+5	1.91%	-29.4%	
50		4	5.98E+6	5.83E+6	6.11E+6	7.17E+4	1.43E+5	2.4%	-39.7%	
100		4	6.14E+6	5.93E+6	6.45E+6	1.15E+5	2.31E+5	3.76%	-43.6%	



Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client:	Lehigh Permanente	Test ID #:	51257	Test Date:	3/26/13
Test Material:	Pond 9	Project #:	20780	Control/Diluent:	Lab Water
				Shelf Zone #:	MUS 1

Test Treatment	Temp (*C)	рН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	24.6	7.50	8.7	89	Date: 3/26/13
6.25 % Effluent	24.6	7.61	8.8	198	Sample ID: 31334
12.5 % Effluent	24.6	7.61	8.7	278	Test Solution Prep:
25 %Effluent	24.6	7.66	9.1	476	New WQ: DH
50 % Effluent	24.6	7.72	9.4	798	Innoculation Time: 2:36
100% Effluent	24.6	7.73	10.1	1436	Innoculation Signoff:
Meter 1D:	60A	PH18	ROOL	Ecolo	
Lab Water Control	24.9	7,53			Date: 3/27/13
6.25 % Effluent	24.9	7.83			WQ Time: 1212
12.5 % Effluent	24.9	7.96			WQ Signoff:
25 %Effluent	24.9	8.07			
50 % Effluent	24.9	8.22			
100% Effluent	24.9	8.33			
Meter ID:	60A	DHIB			
Lab Water Control	24.9	8.87			Date: 3/28/13
6.25 % Effluent	24.9	8.81			WQ Time: O900
12.5 % Effluent	24.9	8.72			WQ Signoff: RA
25 %Effluent	24.9	8.67			
50 % Effluent	24.9	8.61			
100% Effluent	24.9	8.63			
Meter ID:	760A	PH 18			
Lab Water Control	25.0	9.79			Date: 3/24/13
6.25 % Effluent	25.0	9.34			WQ Time: 09 GO
12.5 % Effluent	25.0	9.86			WQ Signoff: DH
25 %Effluent	25.0	9.58			
50 % Effluent	25.0	9.22			
100% Effluent	25.0	8.76			
Meter ID:	60 A	PHIG			
Lab Water Control	25.6	10.02	12.5	44	Date: 3-3U-13
6.25 % Effluent	Z5.6	10.19	13.4	210	Termination Time: 1245
12.5 % Effluent	25.6	10.15	12.8	286	Termination Signoff:
25 %Effluent	25.6	9.97	15.7	446	WQ Time:
50 % Effluent	25.6	4.83	14.9	636	WQ Signoff: W1
100% Effluent	25.6	9.40	15.0	1213	7
Meter ID:	60A	P1+16	ROUT	EC04	

Initial Test Conditions	Alkalinity	/ Hardness	Light Intensity (ftc)
	206	V 608	399.0

Selenastrum capricornutum Cell Density Enumeration Data

Client:	Lehigh Permanente	Initial Count:	10,000 cells/mL
Test Material:	Pond 9	Enumerating Scientist:	KP
Test Start Date:	3/26/13 Start Time: 12:30	Project #:	20780
Test End Date:	•	Test ID #:	51257

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	4.4044	4.1434	4.3162	4.2550	4.2798
6.25%	4.7168	4.5277	4.9008	4.5223	4.6669
12.5%	5.2456	4.9485	4.9130	5.0250	5.0330
25%	5.5048	5.4110	5.6569	5,5844	5. 5393
50%	5.8343	5.8794	6.1132	6.0922	5.9798
100%	6.4537	6.1827	6.0104	5.9329	6.1450
This datasheet has been reviewed for completeness and consistency with	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
Test Acceptability Criteria and/or other issues of concern.	6.428	2.5¢	3/36/13	18:20	A

CETIS Analytical Report

Report Date:

02 Apr-13 09:27 (p 2 of 2)

Test Code:

51257 | 16-8981-6805

Algal Growth	n Test									Paci	fic EcoRis
Analysis ID: Analyzed:	15-9172-085 02 Apr-13 9:		i dpoint: 96h i alysis: Pai	n Cell Densit rametric-Two	-	\		S Version: ial Results	CETISv1	.8.5	
Data Transfo	rm	Zeta	Alt Hyp	Trials	Seed		PMSD	Test Resi	ult		
Jntrans f orme	ed	NA	C > T	NA	NA		9.47%	Passes 96	Sh cell dens	ity-with edt	a
Equal Varian	ice t Two-Sam	ple Test									
Control	vs Contro	ol	Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	(α:5%)		
_ab Water Co	ontrol Hardne	ess Blank	-8.67	1.94	4E+05 6	0.9999	CDF	Non-Signi	ficant Effect		
NOVA Table	e										<u></u> -
Source	Sum So	quares	Mean Squ	uare	DF	F Stat	P-Value	Decision((a:5%)		
Between	6.53953		6.539536	E+12	1	75.2	0.0001	Significan	t Effect		
Error	5.22091	5E+11	87015250	000	6			-			
Total	7.06162	28E+12			7						
Distributiona	ıl Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision(α:1%)			
/ariances	Varian	ce Ratio F		13.5	47.5	0.0604	Equal Vari	ances	-		
Distribution	Shapire	o-Wilk W Nor	mality	0.941	0.645	0.6220	Normal Di	stribution			
ich Call De-	-its with EDTA	Summary					-				
on Cell Den	Sity-with EDTA	Comming									
96h Cell Dens C-%	Control Type	-	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
C-%	Control Type	Count ontr 4	Mean 4.28E+6	95% LCL 4.11E+6	95% UCL 4.45E+6	Median 5020000	Min 4.14E+6	Max 4.40E+6	Std Err 5.48E+4	CV% 2.56%	%Effect
C-%	Control Type	Count ontr 4			***						
	Control Type	Count ontr 4	4.28E+6	4.11E+6	4.45E+6	5020000	4.14E+6	4.40E+6	5.48E+4	2.56%	
C-%))	Control Type	Count ontr 4	4.28E+6	4.11E+6	4.45E+6	5020000 5020000	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
Graphics	Control Type	Count ontr 4	4.28E+6	4.11E+6	4.45E+6	5020000 5020000	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
Graphics	Control Type	Count ontr 4	4.28E+6	4.11E+6	4.45E+6	5020000 5020000	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
7.0E+06 6.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6	4.45E+6	5020000 5020000 6.0E+05 5.0E+05	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
7.0E+06 6.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
5-% 5raphics 7.0E+06 6.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
7.0E+06 6.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05	4.14E+6	4.40E+6	5.48E+4	2.56%	0.0%
7.0E+06 6.0E+06 4103 4104 5.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%
7.0E+06 6.0E+06 4.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05 2.0E+05 1.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%
7.0E+06 6.0E+06 4.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05 2.0E+05 0.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%
7.DE+06 7.DE+06 6.0E+06 VIOU 5.DE+06 3.DE+06 2.DE+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05 2.0E+05 0.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%
7.0E+06 6.0E+06 4.0E+06 3.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 5020000 6.0E+05 5.0E+05 4.0E+05 2.0E+05 0.0E+06 -1.0E+05 -2.0E+05 -3.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%
Graphics 7.0E+06 6.0E+06 4.0E+06 3.0E+06 2.0E+06	Control Type	Count ontr 4	4.28E+6	4.11E+6 5.45E+6	4.45E+6 6.73E+6	5020000 5020000 6.0E+05 5.0E+05 4.0E+05 2.0E+05 1.0E+05 -1.0E+05 -2.0E+05	4.14E+6	4.40E+6	5.48E+4 2.01E+5	2.56%	0.0%

Selenastrum capricornutum Algal Toxicity Test Data Sheet

Client:	Lehigh Permanente	Sample:	Hard	dness Control	
Test Start Date:	3/26/13	Test ID #:	51256	Project #:	20780
Test End Date:	3/36/13	Control/Diluent:		Lab Water	

		T	· · · · · · · · · · · · · · · · · · ·		T
Test Treatment	Temp (°C)	pН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Hardness Control	24.6	7.60	8.806	2485	Date: 3/26/13
					Sample ID #:
					31337 Test Solution Prep:
					New WQ:
					Inoculation Time:
Meter ID	60A	DH 16	ROUG	Ecob	Innoculation Signoff:
Hardness Control	24,9	8.71			Date: 3/27/13
					WQ Time: 1224
Meter ID	60A	0418			WQ Signoff:
Hardness Control	24.9	8.75			Date: 3/28/13
					WQ Time: 0855
Meter ID	60A	PH18			WQ Signoff: RA
Hardness Control	25.0	4.16			Date: 3.29.13
					WQ Time: OQOO
Meter ID	GOA	PHIA			WQ Signoff: D H
Hardness Control	25.6	9,42	14.4	2419	Date: 3-30-13
					WQ Time:
Meter ID	60 A	P1+16	RDO7-	E 44	WQ Signoff: Nf

Initial Count: 10,000 cells/mL	Termination Time:	1400	Enumerating Scientist:	KP	
--------------------------------	-------------------	------	------------------------	----	--

Treatment		Cell Densit	y (cells/mL x 10 °)			Mean Cel	l Density
Troutmont	Rep A	Rep B	Rep C		Rep D	(cells/	/mL x 10 ⁶)
Hardness Control	5.9587	6.1437	5.6434	٥. (6062	9.0	880
This datashee	t has been reviewed for	or completeness and ria and/or other issues of	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
	concern.		4.44	3.82	3/30/13	18:30	

Initial Test Conditions	Alkalinity	Hardness	Light Intensity (ftc)
Aintial Test Collutions	V 318	662	399.0

Appendix D

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 13 Site Water to Selenastrum capricornutum



Report Date:

02 Apr-13 10:17 (p 1 of 1)

Test Code:

51258 | 05-8497-7343

Algal Growth	Test							·			Paci	fic EcoRisk
Batch ID: Start Date: Ending Date: Duration:	03-8250-3928 26 Mar-13 12:30 30 Mar-13 13:30 4d 1h) Prof	tocol: cies:	Cell Growth EPA-821-R-02 Selenastrum c In-House Cultu	apricornutum	1	E	Analyst: Diluent: Brine: Age:	Lab	on Briden oratory Wat Applicable	er	-
	19-8535-7406 : 25 Mar-13 11:53 e: 25 Mar-13 15:30 25h (9 °C)		erial: rce:	Pond 13 Effluent Lehigh Permar Pond 13	nente			Client: Project:	Leh 207	igh Permane 80	ente	
Comparison	Summary			<u> </u>								· · · · · · · · · · · · · · · · · · ·
Analysis ID 10-8568-3880 06-1677-0362				>0 >100	TOEL NA	P MSD 9.87% 6.66%	TU		ıl Var	iance t Two-		
Point Estima	te Summary										<u> </u>	
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	Meth	hor			
20-6148-4167	96h Cell Density	y-with EDTA	IC5 IC10 IC15 IC20 IC25	>100 >100 >100 >100 >100 >100	N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A	<1 <1 <1 <1	Linea	ar Inte	erpolation (I	CPIN)	
			IC40 IC50	>100 >100 >100	N/A N/A N/A	N/A N/A N/A	<1 <1 <1					
96h Cell Dens	sity-with EDTA S	ummary										
C-%	Control Type	Count	Mean			Min	Max	Std I		Std Dev	CV%	%Effect
0 0 6.25 12.5 25 50	Hardness Blank Lab Water Contr	•	6.09E 4.42E 4.83E 4.87E 5.26E 5.31E 5.39E	+6 4.34E+6 +6 4.77E+6 +6 4.84E+6 +6 5.23E+6 +6 5.27E+6	6.24E+6 4.49E+6 4.89E+6 4.90E+6 5.28E+6 5.35E+6 5.51E+6	5.64E+6 4.16E+6 4.68E+6 4.74E+6 5.19E+6 5.18E+6 5.11E+6	6.61E 4.62E 5.01E 4.95E 5.36E 5.41E 5.81E	+6 9.96l +6 8.18l +6 4.49l +6 3.51l +6 5.60l	E+4 E+4 E+4 E+4	4.03E+5 1.99E+5 1.64E+5 8.99E+4 7.01E+4 1.12E+5 2.96E+5	6.61% 4.51% 3.38% 1.85% 1.33% 2.11% 5.48%	0.0% 27.4% 20.6% 20.0% 13.6% 12.8% 11.4%
96h Cell Dens	sity-with EDTA De	etail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4							
0 0 6.25 12.5 25	Hardness Blank Lab Water Contr	5.96E+6	6.14E 4.52E 4.70E 4.95E 5.19E	+6 5.64E+6 +6 4.62E+6 +6 4.68E+6 +6 4.92E+6	6.61E+6 4.16E+6 5.01E+6 4.74E+6 5.26E+6							

Analyst: #B QA:

CETIS Analytical Report

Report Date: Test Code: 02 Apr-13 09:24 (p 1 of 2) 51258 | 05-8497-7343

						1631	Coue.		31230 0	J-043 <i>1-13</i> 43
Algal Growth Test									Paci	ic EcoRisk
•	1677-0362 Apr-13 9:24	•		y-with EDTA itrol vs Treat			S Version		1.8.5	
Data Transform	Zeta	Alt Hyp	Trials	Seed	-	PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA		6.66%	100	>100	NA	1
Dunnett Multiple C	Comparison Test									-
Control vs	C-%	Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	η(α:5%)		
Lab Water Control	6.25	-3.39	2.41	3E+05 6	1.0000	CDF	Non-Sigr	nificant Effec	t	
	12.5	-3.69	2.41	3E+05 6	1.0000	CDF	Non-Sigr	nificant Effec	:t	
	25	-6.86	2.41	3E+05 6	1.0000	CDF	Non-Sigr	nificant Effec	:t	
	50	-7.26	2.41	3E+05 6	1.0000	CDF	Non-Sigr	nificant Effec	t	
	100	-7.98	2.41	3E+05 6	1.0000	CDF	Non-Sigr	nificant Effec	at .	
ANOVA Table										
Source	Sum Squares	Mean Squ	are	DF	F Stat	P-Value	Decision	n(α:5%)		
Between	2.793296E+12	5.586591E	+11	5	18.7	<0.0001	Significa	nt Effect		
Error	5.385431E+11	299190600	000	18						
Total	3.331839E+12			23						
Distributional Test	ts	· · · · · · · · · · · · · · · · · · ·		<u> </u>	- · · · ·				<u></u>	
Attribute	Test		Test Stat	Critical	P-Value	Decision	α:1%)			

96h Cell I	Density-with EDTA St	ummary	:								
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	4	4.42E+6	4.10E+6	4.74E+6	4450000	4.16E+6	4.62E+6	9.96E+4	4.51%	0.0%
6.25		4	4.83E+6	4.57E+6	5.09E+6	4820000	4.68E+6	5.01E+6	8.18E+4	3.38%	-9.37%
12.5		4	4.87E+6	4.73E+6	5.01E+6	4900000	4.74E+6	4.95E+6	4.49E+4	1.85%	-10.2%
25		4	5.26E+6	5.15E+6	5.37E+6	5240000	5.19E+6	5.36E+6	3.51E+4	1.33%	-19.0%
50		4	5.31E+6	5.13E+6	5.49E+6	5320000	5.18E+6	5.41E+6	5.60E+4	2.11%	-20.1%
100		4	5.39E+6	4.92E+6	5.87E+6	5330000	5.11E+6	5.81E+6	1.48E+5	5.48%	-22.1%

15.1

0.884

0.2011

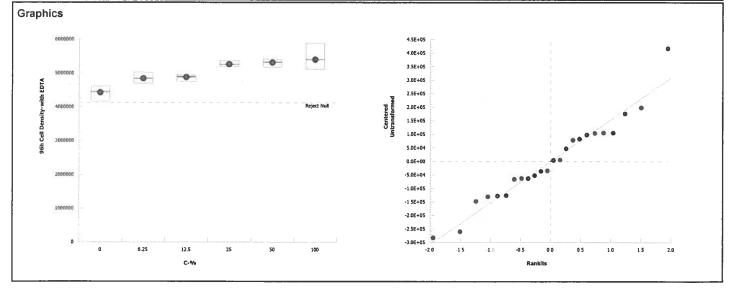
0.4742

Equal Variances

Normal Distribution

7.27

0.962





Variances

Distribution

Bartlett Equality of Variance

Shapiro-Wilk W Normality

CETIS Analytical Report

Report Date:

02 Apr-13 09:24 (p 1 of 1) 51258 | 05-8497-7343

Test Code:

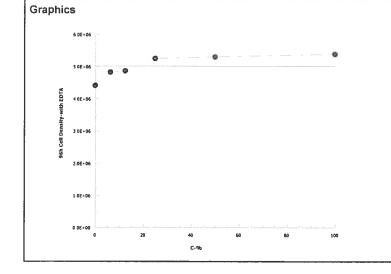
Algal Growth Test	Pacific EcoRisk
	· · · · · · · · · · · · · · · · · · ·

Analysis ID: 20-6148-4167 Endpoint: 96h Cell Density-with EDTA CETIS Version: CETISv1.8.5

Analyzed: 02 Apr-13 9:24 Analysis: Linear Interpolation (ICPIN) Official Results: Yes

Linear	Interpola	tion Options						
X Trans	sform	Y Transform	Seed	d	Resamples	Exp 95% CL	Method	
Linear		Linear	1409	005	200	Yes	Two-Point Interpolation	
Point E	stimates	j					- Company	
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	>100	N/A	N/A	<1	NA	NA		
IC10	>100	N/A	N/A	<1	NA	NA		
IC15	>100	N/A	N/A	<1	NA	NA		
IC20	>100	N/A	N/A	<1	NA	NA		
IC25	>100	N/A	N/A	<1	NA	NA		
IC40	>100	N/A	N/A	<1	NA	NA		
IC50	>100	N/A	N/A	<1	NA	NA		

96h Cell Der	sity-with EDTA S	ummary	Calculated Variate						
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Lab Water Contr	4	4.42E+6	4.16E+6	4.62E+6	9.96E+4	1.99E+5	4.51%	0.0%
.25		4	4.83E+6	4.68E+6	5.01E+6	8.18E+4	1.64E+5	3.38%	-9.37%
2.5		4	4.87E+6	4.74E+6	4.95E+6	4.49E+4	8.99E+4	1.85%	-10.2%
5		4	5.26E+6	5.19E+6	5.36E+6	3.51E+4	7.01E+4	1.33%	-19.0%
)		4	5.31E+6	5.18E+6	5.41E+6	5.60E+4	1.12E+5	2.11%	-20.1%
0		4	5.39E+6	5.11E+6	5.81E+6	1.48E+5	2.96E+5	5.48%	-22.1%



000-034-184-2

CETIS67/228.5.2

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client:	Lehigh Permanente	Test ID #:	51258	Test Date: 3/26/13
Test Material:	Pond 13	Project #:	20780	Control/Diluent: Lab Water
				Shelf Zone #: 1225/

				Si	neli Zone #:
Test Treatment	Temp (°C)	рН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	25.4	7.56	9.1	89	Date: 3/26/13
6.25 % Effluent	25.4	7.58	9.1	198	Sample ID: 31335
12.5 % Effluent	25.4	7.67	9.1	282	Test Solution Prep:
25 %Effluent	25.4	7.91	9.2	464	New WQ: DH
50 % Effluent	25.4	8.03	9.4	757	Innoculation Time: 2:36
100% Effluent	25.4	8.07	10,0	1315	Innoculation Signoff;
Meter 1D:	06	81118	RDOG	E06	
Lab Water Control	25.5	7.94			Date: 03-27-13
6.25 % Effluent	25.5	7.73			WQ Time: [200
12.5 % Effluent	25.5	7.86			WQ Signoff: WW
25 %Effluent	25.5	8.04			
50 % Effluent	25.5	8.18			
100% Effluent	25.5	8.34			
Meter ID:	06	Ph18			
Lab Water Control	75.3	8.81			Date: 3/28/13
6.25 % Effluent	25.3	8.63			WQ Time: 0950
12.5 % Effluent	25.3	8.64			WQ Signoff: RA
25 %Effluent	25.3	8.53			
50 % Effluent	25.3	8.54			
100% Effluent	25.3	8.42			
Meter 1D:	00	PH18			
Lab Water Control	25.3	9,73			Date: 3.29.17
6.25 % Effluent	25.3	9.76			WQ Time: \\ O O
12.5 % Effluent	25.3	9,61			WQ Signoff: DH
25 %Effluent	25.3	9.43			
50 % Effluent	25.3	9.13			
100% Effluent	25.7	8.63			
Meter ID:	06	PHIG			
Lab Water Control	25.(10.07	14.3	97	Date: 3-30-13
6.25 % Effluent	25.1	10.13	13.3	224	Termination Time: 1320
12.5 % Effluent	25.\	10.11	15.7-	247	Termination Signoff:
25 %Effluent	25-1	9.43	13.Z	427	WQ Time: C930 WQ Signoff: NJ
50 % Effluent	25.1	9.74	149	653	WQ Signoff: NL
100% Effluent	25.1	9,45	15.2	1130	
Meter 1D:	66	P1216	ROIT	ECOH	

Initial Test Conditions	1	Alkalinity		Hardness	Light Intensity (ftc)
	V	164	V	694	409.27

Selenastrum capricornutum Cell Density Enumeration Data

Client:	Lehigh Permanente	Initial Count:	I0,000 cells/mL	
Test Material:	Pond 13	Enumerating Scientist:	KP	
Test Start Date: 3/26/13	Start Time: 12:30	Project #:	20780	
Test End Date: 3/30/13	End Time: 1336	Test ID #:	51258	

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	4.3816	4.5213	4.6184	4.1573	4.4190
6.25%	4.9369	4.7040	4.6835	5.0075	4.8330
12.5%	4.8748	4.9473	4.9103	4.7431	4.8704
25%	5.3553	5.1946	5.222	5. 2417	5.2586
50%	5.4110	5.2543	5.3893	5.1754	5.3075
100%	5.8104	5.1101	5.3272	5.3307	5.3947
This datasheet has been reviewed for completeness and consistency with	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
Test Acceptability Criteria and/or other issues of concern.	4.42	4.51	3/30/13	18:30	d

Report Date: Test Code: 02 Apr-13 09:24 (p 2 of 2) 51258 | 05-8497-7343

Data Transform Zeta Alt Hyp Trials Seed PMSD Test Result								lest	Code:		51258 0	5-8497-73
Analyzed:	Algal Growt	h Test									Paci	fic EcoRis
Analyzed:	Analysis ID:	10-8568-3880	En	dpoint: 96	h Cell Densit	v-with EDTA	λ	CFT	IS Version:	CETISv1	.8.5	
Distributional Test	Analyzed:			•		-						
Distributional Test	Data Transf	orm	Zeta	Alt Hvp	Trials	Seed		PMSD	Test Resi	ult		
Test Stat	`										ity-with ed	ta
Test Stat	Egual Varia	nce t Two-Sampl	e Test									
ANOVA Table Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%) Setween 5.571456E+12 5.571456E+12 1 55.3 0.0003 Significant Effect Firor 6.050239E+11 1.008373E+11 6 Civil 6.17648E+12 7 Distributional Tests Stattribute Test Test Stat Critical P-Value Decision(α:1%) Variances Variance Ratio F 4.08 47.5 0.2780 Equal Variances Shapiro-Vilk W Normality 0.988 0.645 0.9923 Normal Distribution Shapiro-Vilk BDTA Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Lab Water Control Type Count Mean 95% LCL 95% UCL Median Min Min Max Std Err CV% %Effect Median Min Min Max Std Err CV% %Effect Median Min Min Min Max Std Err CV% %Effect Median Min Min Min Min Min Min Min Min Min Mi				Test Stat	Critical	MSD DE	P-Value	P-Tyne	Decision	a:5%)		
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)			s Blank							•	t	
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)	ANOVA Tab	le										
Setween 5.571456E+12 5.571456E+12 1 1.008373E+11 6	Source		ıares	Mean Sq	uare	DF	F Stat	P-Value	Decision(α:5%)		
Cotal	Between			·····		1	55.3	0.0003				
Test Test Static P-Value Decision(α:1%)	Error	6.050239	E+11	1.008373	E+11	6						
Test Test Stat Critical P-Value Decision(α:1%) Fariances	Total	6.17648E	+12			7						
Variances Variance Ratio F Shapiro-Wilk W Normality 0.988 0.645 0.9923 Normal Distribution Shapiro-Wilk W Normality 0.988 0.645 0.9924 0	Distribution	al Tests										
Shapiro-Wilk W Normality	Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Shapiro-Wilk W Normality	/ariances	Variance	Ratio F		4.08	47.5	0.2780	Equal Var	iances			
## Control Type	Distribution	Shapiro-	Wilk W Nor	mality								
Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect Lab Water Contr 4 4.42E+6 4.10E+6 4.74E+6 5130000 4.16E+6 4.62E+6 9.96E+4 4.51% 0.0% Hardness Blank 4 6.09E+6 5.45E+6 6.73E+6 5130000 5.64E+6 6.61E+6 2.01E+5 6.61% -37.8% Graphics Resid Nul Resid N	96h Cell Der	nsity-with EDTA S	Summary									
Hardness Blank 4 6.09E+6 5.45E+6 6.73E+6 5130000 5.64E+6 6.61E+6 2.01E+5 6.61% -37.8% Fraphics Reject Nat 1.0E+05 1.0E+05 1.0E+05 1.0E+05 1.0E+05 1.0E+05	C-%		_	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
Hardness Blank 4 6.09E+6 5.45E+6 6.73E+6 5130000 5.64E+6 6.61E+6 2.01E+5 6.61% -37.8% Pagest Not 1.05E+05 1.05)	Lab Water Con	tr 4	4.42E+6	4.10E+6	4.74E+6	5130000	4.16E+6	4.62E+6	9.96E+4	4.51%	0.0%
7.0E+06 6.0E+06 6.0E+06 7.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06)	Hardness Blank	(4	6.09E+6	5.45E+6	6.73E+6	5130000	5.64E+6	6.61E+6	2.01E+5		
5.0E+05 Reject Null 7.0E+05 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06	Graphics		-							· · · · · ·		
5.0E+05 Reject Null 7.0E+05 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06	7.0E+06						6 0F405					
6.0E+06 Reject Null 4.0E+05 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06												
3.0E+06 1.0E+06 1.0E+06 1.0E+06 1.0E+06	6.0E+06								1			
1.0E+06 -1.0E+05 -2.0E+05 -1.0E+05 -1.0	ATO.				Reject Null		4.0E+05		1			
1.0E+06	5.0E+06					_			l I			
1.0E+06	-Agista					ītere	2.0E+05				•	
1.0E+06	å 4.0E+06 ₩					8	1.0E+05					
-1.0E+05 -2.0E+05 -3.0E+05 -4.0E+05	96 305-05						0.0E+00		ا الروية	<u></u>		
2.0E+05 1.0E+06 -4.0E+05	3,42,400						-1.0E+05					
1.DE+06 -3.0E+05 -4.0E+05	2.0E+06								•			
1.0E+06 -4.0E+05								•				
	1.DE+06						-3.0E+05		1			
0.05+00							-4.0E+05		1			
0 0 15 10 05 00 05 10 15	0.0E+00				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		-5.0E+05					

C-%

Selenastrum capricornutum Algal Toxicity Test Data Sheet

Client:	Lehigh Permanente	Sample:	Ha	rdness Control		_
Test Start Date:	3/26/13	Test ID #:	51256	Project #:	20780	_
Test End Date:	3/36/13	Control/Diluent:		Lab Water		

			<u> </u>		
Test Treatment	Temp (°C)	pН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Hardness Control	24.6	7.60	B-856	2485	Date: 3/26/13
					Sample ID #: 31337
					Test Solution Prep:
					New WQ:
					Inoculation Time:
Meter ID	60A	DH 16	ROUG	Ecob	Innoculation Signoff:
Hardness Control	24,9	6.71			Date: 3/27/13
					WQ Time: 1224
Meter ID	60A	0418			WQ Signoff:
Hardness Control	24.9	8.75			Date: 3/28/13
					WQ Time: 0855
Meter ID	60A	PH18			WQ Signoff: RA
Hardness Control	2.5.0	4.16			Date: 3.29.13
					WQ Time: つりゅっ
Meter ID	GOA	PHIA			WQ Signoff: NH
Hardness Control	25.6	7.42	14.4	2419	Date: 3-30-13
					WQ Time: WF 1000
Meter ID	60 A	PH16	RDOT	E 604	WQ Signoff: Wf

Initial Count: 10,000 cells/mL	Termination Time:	1400	Enumerating Scientist:	Kr	
--------------------------------	-------------------	------	------------------------	----	--

Treatment	Treatment Cell Density (cells/mL x 10 ")							
Troutinont	Rep A	Rep B	Rep C		Rep D	(cells/mL x 10 ⁶)		
Hardness Control	5.9587	6.1437	5.6434	34 6.6062		6.0	880	
This datasheet has been reviewed for completeness and consistency with Test Acceptability Criteria and/or other issues of		Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:		
	concern.		4.44	3.82	3/30/13	18:30	2	

Initial Test Conditions	L	Alkalinity	1	Hardness	Light Intensity (ftc)
Tilitial Test Collutions	<u> </u>	318	1	662	399.0

Appendix E

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 14 Site Water to Selenastrum capricornutum



CETIS Summary Report

Report Date:

02 Apr-13 09:34 (p 1 of 1)

Test Code:

51259 | 13-9264-1363

Algal Growth	Test										Paci	fic EcoRisk
Batch ID: Start Date: Ending Date: Duration:	07-6025-0978 26 Mar-13 12:30 30 Mar-13 14:30 4d 2h) P	est Type: rotocol: pecies: ource:		02-013 (2002) capricornutum lture	1		Analyst: Diluent: Brine: Age:	Lab	on Briden oratory Wate Applicable	er	
Receive Date:	14-7229-2803 25 Mar-13 12:55 25 Mar-13 15:30 24h (13.7 °C)	5 M	ode: aterial: ource: tation:	Pond 14 Effluent Lehigh Perm Pond 14	anente			Client: Project:	Leh 207	igh Permane 80	ente	
Comparison S	Summary											
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	ΤU	Me	thod			
07-3427-9278 01-6559-8600	96h Cell Density 96h Cell Density	•		>0 >100	NA	12.9% 8.92%	1			riance t Two ny-One Rank		
Point Estimate	e Summary											
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	Me	thod			
	96h Cell Density	ummary	IC10 IC15 IC20 IC25 IC40 IC50	>100 >100 >100 >100 >100 >100 >100 >100	N/A N/A N/A N/A N/A N/A	N/A N/A N/A N/A N/A N/A	<1 <1 <1 <1 <1 <1 <1			erpolation (I		
	Control Type	Count	Mean			Min	Max		Err	Std Dev	CV%	%Effect
0	Hardness Blank Lab Water Contr		6.09E 4.46E			5.64E+6 4.08E+6	6.61 4.95		1E+5 8E+5	4.03E+5 4.35E+5	6.61% 9.75%	0.0% 26.7%
6.25		4	4.98E	+6 4.93E+6		4.79E+6	5.09		1E+4	1.28E+5	2.58%	18.2%
12.5		4	5.15E			5.13E+6	5.17		8E+3	1.56E+4	0.3%	15.4%
25 50		4	5.44E 5.75E			5.30E+6	5.61		3E+4	1.41E+5	2.58%	10.7%
100		4	5.70E			5.60E+6 5.41E+6	5.97 6.05		3E+4 3E+5	1.77E+5 2.66E+5	3.08% 4.67%	5.52% 6.32%
96h Cell Dens	ity-with EDTA De	etail										· · · · · · · · · · · · · · · · · · ·
	Control Type	Rep 1	Rep 2	Rep 3	Rep 4							
	Hardness Blank											
	Lab Water Contr											
6.25		5.01E+6										
12.5		5.15E+6	5.16E									
25		5.61E+6	5.49E	+6 5.35E+6	5.30E+6							
25 50		5.61E+6 5.97E+6										

Analyst: 46 QA:

CETIS Analytical Report

4

4

5.44E+6

5.75E+6

5.21E+6

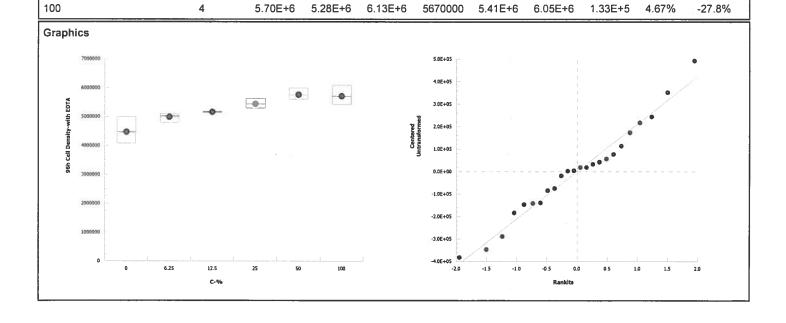
5.47E+6

Report Date:

02 Apr-13 09:34 (p 1 of 2)

Test Code: 51259 | 13-9264-1363

Algal Growth	Test												Paci	fic EcoRisk
Analysis ID: Analyzed:		559-8600 Apr-13 9:33		ndpoint: nalysis:		Cell Densit	-				IS Version:		.8.5	
Data Transfo	rm		Zeta	Alt H	ур	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransforme	d		NA	C > T		NA	NA			8.92%	100	>100	NA	1
Steel Many-C	ne Ra	nk Sum Te	st				-							
Control	vs	C-%		Test S	Stat	Critical	Ties	DF	P-Value	P-Type	Decision	(α:5%)		
Lab Water Co	ntrol	6.25		25		10	0	6	0.9997	Asymp	Non-Sign	ificant Effect		
		12.5		26		10	0	6	0.9999	Asymp	Non-Sign	ificant Effect		
		25		26		10	0	6	0.9999	Asymp	Non-Sign	ificant Effect		
		50		26		10	0	6	0.9999	Asymp	Non-Sign	ificant Effect		
		100		26		10	0	6	0.9999	Asymp	Non-Sign	ificant Effect		
ANOVA Table	9	·												
Source		Sum Squa	ires	Mean	Squ	are	DF		F Stat	P-Value	Decision	(α:5%)		
Between		4.789169E	+12	9.578	337E	+11	5		17.5	<0.0001	Significan	t Effect		
Error		9.843308E	+11	54685	040	000	18							
Total		5.773499E	+12				23							
Distributiona	l Tests	5												
Attribute		Test				Test Stat	Critic	al	P-Value	Decision((a:1%)			
Variances		Bartlett Ed	quality of	Variance		17.8	15.1		0.0032	Unequal \	/ariances			
Distribution		Shapiro-W	ilk W No	rmality		0.977	0.884		0.8389	Normal Di	stribution			
001 0 11 0		AL EDTA C	Imama o m /									-		
96h Cell Den	sity-wi	III ED IA SI	unninary											
C-%	•	rol Type	Count	Mean		95% LCL	95% L	JCL	Median	Min	Max	Std Err	CV%	%Effect
	Cont		Count	Mean 4.46E		95% LCL 3.77E+6	95% U		Median 4410000	Min 4.08E+6	Max 4.95E+6	Std Err 2.18E+5	CV% 9.75%	%Effect
C-%	Cont	rol Type	Count		+6			+6						



5.66E+6

6.03E+6

5420000

5720000

5.30E+6

5.60E+6

5.61E+6

5.97E+6

7.03E+4

8.86E+4

2.58%

3.08%

-21.9%

-28.9%

25

50

CETIS Analytical Report

Report Date:

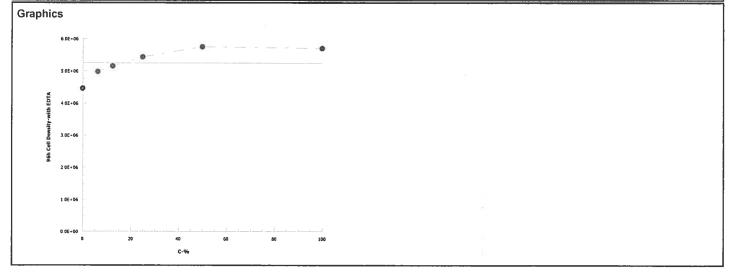
02 Apr-13 09:34 (p 1 of 1)

Test Code: 51259 | 13-9264-1363

Algal Growth	Test			J	Pacific EcoRisk
Analysis ID:	06-3137-2421	Endpoint:	96h Cell Density-with EDTA	CETIS Version: CET	TISv1.8.5
Analyzed:	02 Apr-13 9:33	Analysis:	Linear Interpolation (ICPIN)	Official Results: Yes	i

Linear	Interpola	tion Options					
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method
Linear		Linear	4776	607	200	Yes	Two-Point Interpolation
Point E	stimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL	
IC5	>100	N/A	N/A	<1	NA	NA	
IC10	>100	N/A	N/A	<1	NA	NA	
IC15	>100	N/A	N/A	<1	NA	NA	
IC20	>100	N/A	N/A	<1	NA	NA	
IC25	>100	N/A	N/A	<1	NA	NA	
IC40	>100	N/A	N/A	<1	NA	NA	
IC50	>100	N/A	N/A	<1	NA	NA	

96h Cell	Density-with EDTA S	ummary			Ca	lculated Va	riate			
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	4.46E+6	4.08E+6	4.95E+6	2.18E+5	4.35E+5	9.75%	0.0%	
6.25		4	4.98E+6	4.79E+6	5.09E+6	6.41E+4	1.28E+5	2.58%	-11.6%	
12.5		4	5.15E+6	5.13E+6	5.17E+6	7.78E+3	1.56E+4	0.3%	-15.5%	
25		4	5.44E+6	5.30E+6	5.61E+6	7.03E+4	1.41E+5	2.58%	-21.9%	
50		4	5.75E+6	5.60E+6	5.97E+6	8.86E+4	1.77E+5	3.08%	-28.9%	
100		4	5.70E+6	5.41E+6	6.05E+6	1.33E+5	2.66E+5	4.67%	-27.8%	



Analyst: 4B



Selenastrum capricornutum Algal Toxicity Test Water Quality Data

Client:	Lehigh Permanente	Test ID #:	51259	Test Date: 3	126/13	
Test Material:	Pond 14	Project #:	20780	Control/Diluent:	Lab Water	
				Shelf Zone #:	2251	

Test Treatment	Temp (°C)	pH	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Lab Water Control	25.4	7.50	9.1	88	Date: 3/26/13
6.25 % Effluent	25.4	7.60	9.1	197	Sample ID: 31336
12.5 % Effluent	25.4	7.74	9.3	285	Test Solution Prep:
25 %Effluent	25.4	7.93	9.2	948	New WQ: 0H
50 % Effluent	25.4	8.08	9.9	764	Innoculation Time: 12:30
100% Effluent	25.4	8.16	11.4	1319	Innoculation Signoff:
Meter ID:	06	PHIB	RDOL	ECO 6	
Lab Water Control	25.5	7.77			Date: 3-27-13
6.25 % Effluent	25.5	7-64			WQ Time: (ZOO
12.5 % Effluent	25.5	7.88			WQ Signoff: W
25 %Effluent	2515	7.90			
50 % Effluent	25-5	8-24			
100% Effluent	25.5	8.40			
Meter ID:	06	Ph 18			
Lab Water Control	25.3	9.02			Date: 3/28/13
6.25 % Effluent	25.3	8.79			WQ Time: 1000
12.5 % Effluent	25.3	8.66			WQ Signoff: RA
25 %Effluent	25.3	8.65			
50 % Effluent	25.3	8.57			
100% Effluent	253	8.53			
Meter ID:	00	PH18			
Lab Water Control	25.3	9.66			Date: 3.29,13
6.25 % Effluent	25.3	9.72			WQ Time: 1100
12.5 % Effluent	25.3	9.65			WQ Signoff: O (+
25 %Effluent	25.3	9.58			
50 % Effluent	75.3	9,14			
100% Effluent	25.3	8.73			
Meter ID:	06	PH 19			
Lab Water Control	25.1	9.90	13.6	93	Date: 3-30-13
6.25 % Effluent	25.1	9.97	14.4	200	Termination Time: 1430
12.5 % Effluent	25.1	9.84	14.9	282 282	Termination Signoff:
25 %Effluent	25.1	10.01	15.3	414	WQ Time: 0 9 30
50 % Effluent	25.1	୍ବ.ଡ୍ସ	15.8	७५७	WQ Signoff: WL
100% Effluent	25.1	9.42	15.7	1123	
Meter ID:	06	PH 16	800D	BC04	

Initial Test Conditions	Alkalinity	/ Hardness	Light Intensity (ftc)
	173	664	409.27

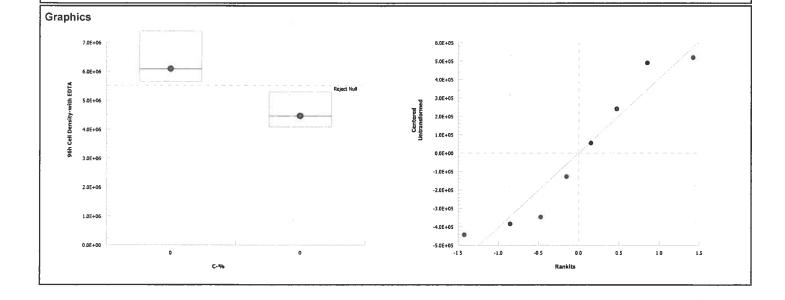
Selenastrum capricornutum Cell Density Enumeration Data

Client:	Lehigh Permanente	Initial Count:	10,000 cells/mL	
Test Material:	Pond 14	Enumerating Scientist:	KP	
Test Start Date: 3	12413 Start Time: 121.30	Project #:	20780	
Test End Date: 3		Test ID #:	51259	

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control	4.1126	4.7031	4.9517	4.0772	4.4612
6.25%	5.0109	5.0912	5.0204	4.7946	4. 9793
12.5%	5.1537	5.1888	5.1321	5.1698	5.1528
25%	5.6076	5.4912	5.3508	5.2964	5.4305
50%	5.9474	5.8275	5.6044	5.6093	5.7528
100%	5.7200	6.0530	5.6268	5.4130	5.7032
This datasheet has been reviewed for completeness and consistency with	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
Test Acceptability Criteria and/or other issues of concern.	4.46	9.75	3/30/13	18:20	A

Report Date: Test Code: 02 Apr-13 09:34 (p 2 of 2) 51259 | 13-9264-1363

								1621	Code.		31233 1	3-3204-1303
Algal Growth	Test					- • •					Paci	fic EcoRisk
Analysis ID:	07-3	427-9278		Endpoint: 9	6h Cell Densit	y-with EDTA	\	CET	S Version:	CETISv1	.8.5	
Analyzed:	02 A	pr-13 9:33	}	Analysis: P	arametric-Two	Sample		Offic	ial Results:	Yes		
Data Transfor	m		Zeta	Alt Hyp	Trials	Seed		PMSD	Test Resu	ılt		
Untransformed	i		NA	C > T	NA	NA		12.9%	Passes 96	h cell dens	ity-with edi	ta
Equal Variand	e t Tw	o-Sample	e Test									
Control	vs	Control		Test Sta	at Critical	MSD DF	P-Value	P-Type	Decision(α:5%)		
Lab Water Cor	ntrol	Hardness	s Blank	-5.49	1.94	6E+05 6	0.9992	CDF	Non-Signif	icant Effect		
ANOVA Table	·											
Source		Sum Squ	ares	Mean S	quare	DF	F Stat	P-Value	Decision(α:5%)		
Between		5.293282	E+12	5.29328	2E+12	1	30.1	0.0015	Significant	Effect		
Error		1.054105	E+12	1.75684	2E+11	6						
Total		6.347387	E+12			7						
Distributional	Tests											
Attribute		Test			Test Stat	Critical	P-Value	Decision(a:1%)			
Variances		Variance	Ratio F		1.17	47.5	0.9010	Equal Var	iances			
Distribution		Shapiro-	Wilk W	Normality	0.898	0.645	0.2781	Normal Di	stribution			
96h Cell Dens	ity-wi	th EDTA S	Summa	ry				·				
C-%	Contr	ol Type	Coun	nt Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab V	Vater Cont	r 4	4.46E+6	3.77E+6	5.15E+6	5300000	4.08E+6	4.95E+6	2.18E+5	9.75%	0.0%



6.73E+6

5300000

5.64E+6

6.61E+6

2.01E+5

6.61%

-36.5%

0

Hardness Blank 4

6.09E+6

5.45E+6

${\it Selenastrum\ capricornutum\ Algal\ Toxicity\ Test\ Data\ Sheet}$

Client:	Lehigh Permanente	Sample:	Har	Hardness Control			
Test Start Date:	3/26/13	Test ID #:	51256	Project #:	20780		
Test End Date:	3/36/13	Control/Diluent:		Lab Water			

Test Treatment	Temp (°C)	pН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
Hardness Control	24.6	7.60	8 826	2485	Date: 3/26/13
					Sample ID #: 31337
					Test Solution Prep:
					New WQ:
					Inoculation Time:
Meter ID	60A	DH 16	ROOG	Ecob	Innoculation Signoff:
Hardness Control	24.9	8.71			Date: 3/27/13
					WQ Time: 1224
Meter ID	WOA	0418			WQ Signoff:
Hardness Control	24.9	8.75			Date: 3/28/13
					WQ Time: 0855
Meter ID	60 A	PH18			WQ Signoff: RA
Hardness Control	2.5.0	4.16			Date: 3.29.13
					WQTime: つりぃぃ
Meter ID	GOA	PHIA			WQ Signoff: D H
Hardness Control	25.6	7.42	14.4	2415	Date: 3-30-13
					WQ Time: W 1000
Meter ID	601	P1+16	RDO7-	E 604	WQ Signoff: Wf

Initial Count: 10,000 cells/mL	Termination Time: 1400	Enumerating Scientist:
<u> </u>		

Treatment		Cell Density (cells/mL x 10 °)									
reatment	Rep A	Rep B	Rep C		Rep D	(cells/mL x 10 ⁶)					
Hardness Control	5.9587	6.1437	5.6434	(0.0	6062	4.0	880				
This datashee consistency with T	t has been reviewed for	or completeness and ria and/or other issues of	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:				
	concern.		4.44 3.82 3/30/13			18:30	Δ				

Initial Test Conditions		Alkalinity	Hardness	Light Intensity (ftc)
Timilar rest Conditions	√	318	662	399.0

Appendix F

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 4A Site Water to Ceriodaphnia dubia



CETIS Summary Report

Report Date: Test Code:

02 Apr-13 09:36 (p 1 of 2) 51248 | 18-1180-8439

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk Batch ID: 18-1419-6084 Test Type: Reproduction-Survival (7d) Analyst: Melinda Hooper Start Date: 26 Mar-13 14:55 Protocol: EPA-821-R-02-013 (2002) Diluent: Laboratory Water Ending Date: 01 Apr-13 15:00 Species: Ceriodaphnia dubia Brine: Not Applicable **Duration:** 6d 0h Source: In-House Culture Age: 1

Sample ID: 18-0428-6412 Code: Pond 4A Client: Lehigh Permanente

Sample Date: 25 Mar-13 11:20 Material: Effluent Project: 20780 Receive Date: 25 Mar-13 15:30 Source: Lehigh Permanente

Sample Age: 28h (18.1 °C) Station: Pond 4A

Comparison Summary

	•						
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
03-9566-6978	Reproduction	<0	0		9.23%		Equal Variance t Two-Sample Test
00-6582-1463	Reproduction	<6.25	6.25	NA	15.0%	>16	Steel Many-One Rank Sum Test
08-1864-1887	Survival	0	>0		NA		Fisher Exact Test
15-4705-3793	Survival	12.5	25	17.68	NA	8	Fisher Exact/Bonferroni-Holm Test

Point Estimate Summary

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
07-5980-9536	Reproduction	IC5	1.21	0.679	4.25	82.54	Linear Interpolation (ICPIN)
		IC10	2.42	1.36	6.49	41.27	
		IC15	3.63	2.04	6.93	27.51	
		IC20	4.85	2.72	7.45	20.64	
		IC25	6.06	3.39	7.95	16.51	
		IC40	8.21	5.43	9.58	12.18	
		IC50	9.59	7.34	10.7	10.42	
15-0004-7354	Survival	EC5	11.4	4.75	15.5	8.749	Linear Regression (MLE)
		EC10	13.2	6.42	17.2	7.603	
		EC15	14.5	7.82	18.6	6.916	
		EC20	15.6	9.12	19.9	6.415	
		EC25	16.6	10.4	21.1	6.014	
		EC40	19.6	13.9	25.2	5.111	
		EC50	21.6	16.2	28.8	4.634	

Reproduction Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	10	10.3	9.47	11.1	7	14	0.7	2.21	21.5%	0.0%
0	Lab Water Contr	10	28.3	26.7	29.9	18	33	1.33	4.22	14.9%	-175.0%
6.25		10	21	18	24	4	29	2.57	8.12	38.7%	-104.0%
12.5		10	8.2	6.85	9.55	2	14	1.14	3.61	44.1%	20.4%
25		10	5	4.57	5.43	3	6	0.365	1.15	23.1%	51.5%
50		10	3.8	3.22	4.38	1	6	0.49	1.55	40.8%	63.1%
100		10	0.7	0.142	1.26	0	4	0.473	1.49	213.0%	93.2%

Survival Summary

C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	10	1	1	1	1	1	0	0	0.0%	0.0%
0	Lab Water Contr	10	1	1	1	1	1	0	0	0.0%	0.0%
6.25		10	1	1	1	1	1	0	0	0.0%	0.0%
12.5		10	0.9	0.782	1	0	1	0.1	0.316	35.1%	10.0%
25		10	0.4	0.207	0.593	0	1	0.163	0.516	129.0%	60.0%
50		10	0	0	0	0	0	0	0		100.0%
100		10	0	0	0	0	0	0	0		100.0%

Report Date: Test Code: 02 Apr-13 09:36 (p 2 of 2) 51248 | 18-1180-8439

							Tes	t Code:		51248 1	8-1180-843
Ceriodap	hnia Survival and Re	producti	on Test							Paci	fic EcoRisk
Reproduc	ction Detail			<u>-</u>		-			-		92
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	10	7	10	12	7	9	12	11	14	11
0	Lab Water Contr	33	28	18	27	27	32	30	30	27	31
6.25		16	24	25	11	4	25	29	26	28	22
12.5		4	14	6	2	10	10	8	7	12	9
25		6	4	6	4	3	6	6	5	4	6
50		4	2	5	3	4	6	5	5	1	3
100		3	4	0	0	0	0	0	0	0	0
Survival I	Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1	1	1	1	1	1	1	1	1	1
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		0	1	1	1	1	1	1	1	1	1
25		0	0	1	1	0	0	1	0	0	1
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0
Survival E	Binomials										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0	Lab Water Contr	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		0/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		0/1	0/1	1/1	1/1	0/1	0/1	1/1	0/1	0/1	1/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1
100		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

Report Date:

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CETIS An	alytica	и керо	rτ					•	Code:	U.		8-1180-8439
Ceriodaphn	ia Surviv	al and Re	produ	ction Test							Paci	fic EcoRisk
Analysis ID: Analyzed:		05-3793 or-13 9:02		Endpoint: Su Analysis: ST	rvival P 2x2 Conti	ngency Tabl	es		S Version: ial Results:	CETISv Yes	1.8.5	
Data Transfo	orm		Zeta	Alt Hyp	Trials	Seed			NOEL	LOEL	TOEL	TU
Untransforme	ed			C > T	NA	NA			12.5	25	17.68	8
Fisher Exac	t/Bonferi	oni-Holm	Test								-	
Control	vs (C-%		Test Stat	P-Value	P-Type	Decision	(a:5%)				
Lab Water C	ontrol	6.25		1	1.0000	Exact	Non-Signi	ficant Effect				
		12.5		0.5	1.0000	Exact	Non-Signi	ficant Effect				
		25		0.00542	0.0163	Exact	Significan	t Effect				
		50		5.41E-06	<0.0001	Exact	Significan	t Effect				
		100		5.41E-06	<0.0001	Exact	Significan	t Effect				
Data Summa	ary											
C-%	Contro	ol Type	NR	R	NR + R	Prop NR	Prop R	%Effect				
0	Lab W	ater Cont	10	0	10	1	0	0.0%				
6.25			10	0	10	1	0	0.0%				
12.5			9	1	10	0.9	0.1	10.0%				
25			4	6	10	0.4	0.6	60.0%				
50			0	10	10	0	1	100.0%				
100			0	10	10	0	1	100.0%				
Graphics											. · · · · · · · · · · · · · · · · · · ·	
1.0	•	•										
0.9			0									
0.8												
0.7 19												
o.o												
0.5												
0.4												
0.3												
0.2												
0.1												

Report Date:

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Test Code:

51248 | 18-1180-8439

0 Lab Water Contro 10 1 1 1 0 0 0.0% 0.0% 10 10 6.25 10 10 1 1 1 0 0 0 0.0% 0.0% 10 10 12.5 10 0.9 0 1 0.1 0.316 35.1% 10.0% 9 10 25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 0 0 100.0% 0 10													
Parameter Par	Cerioda	phnia Sur	vival and Re	eproduction	n Test							Pac	ific EcoRisk
Maily Mail	Analysis	s ID: 15	-0004-7354	End	point: Sur	vival			CETI	S Version:	CETISv1	.8.5	
Mode Function Function Control Threshold Option Very Ve	Analyze	d: 02	Apr-13 9:04	Ana	lysis: Line	ear Regress	ion (MLE)		Offic	ial Results:	: Yes		
Regression Sum No	Linear F	Regressio	n Options										
Regression Summary	Model F	unction			Threshold	d Option	Threshold	Optimized	Pooled	Het Corr	Weighted	d	
Note	Log-Norr	mal [NED=	A+B*log(X)]		Control Th	reshold		<u> </u>		No			
Point Point Point Point Point Point Point Point Point Point Point Point Point Point Point Point Point	Regress	sion Sumn	nary										
Point Fith Point Fith Point Fith Point Fith Point Fith Fi	Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision	(a:5%)	
Parameter	42	-10.2	38.4	25.8	1.33	0.168						·	ed
EC5	Point Es	stimates											
EC10	Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC15	EC5	11.4	4.75			6.467	21.04						
EC20	1												
EC25	EC15	14.5	7.82	18.6	6.916	5.374	12.78						
EC40 19.6 13.9 16.2 28.8 4.634 3.472 6.175 13.9 16.2 28.8 4.634 3.472 6.175 7.194	EC20	15.6	9.12	19.9	6.415	5.031	10.97						
Regression Parameter Setimate Std Error 95% LCL 95% UCL 1 Stat P-Value Decision(α:5%)	EC25	16.6	10.4	21.1	6.014	4.736	9.66						
Parameter	EC40	19.6	13.9	25.2	5.111	3.962	7.194						
Parameter	EC50	21.6	16.2	28.8	4.634	3.472	6.175						
Threshold S.59E-08 0.000747 -0.000146 0.000147 0.000747 0.9995 Non-Significant Parameter Slope 5.96 1.7 2.63 9.29 3.51 0.0393 Significant Parameter Significant Parameter 1.000747 0.9995 Non-Significant Parameter 1.000747 1.000747 0.9995 Non-Significant Parameter 1.000747 1.0007	Regress	ion Paran	neters										
Slope	Paramet	ter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(a:5%)			
Note	Threshol	ld	5. 59E-08	0.0000747	-0.000146	0.000147	0.000747	0.9995	Non-Signif	icant Param	neter		
Source Sum Squ = residual Squ =	Slope		5.96	1.7	2.63	9.29	3.51	0.0393	Significant	Parameter			
Source Sum Square Mean Square DF F Stat P-Value Decision(α:5%)	Intercept	t	-7.95	2.29	-12.4	-3.47	-3.48	0.0402	Significant	Parameter			<u> </u>
Model 46.34455 46.34455 1 432 0.0002 Significant	ANOVA	Table											
Residual 0.3221174 0.1073725 3	Source		Sum Squa	ares Mea	n Square	DF	F Stat	P-Value	Decision(α:5%)			
Netribute Method Test Stat Critical P-Value Decision(a:5%)	Model		46.34455	46.3	4455	1	432	0.0002	Significant				
Nethod Nethod P-Value Decision(0:5%)	Residual		0.3221174	0.10	73725	3							
Coodness-of-Fit Pearson Chi-Sq GOF 0.322 7.81 0.9558 Non-Significant Heterogenity	Residua	l Analysis											
Coodness-of-Fit Pearson Chi-Sq GOF	Attribute	•	Method			Test Stat	Critical	P-Value	Decision(a:5%)			
Likelihood Ratio GOF 0.471 7.81 0.9253 Non-Significant Heterogenity Distribution Survival Summary Calculated Variate(A/B) C-% Control Type Count Mean Min Max Std Err Std Dev CV% %Effect A B 0 Lab Water Control 10 1 1 1 0 0.0% 0.0% 0.0% 10 10 6.25 10 1 1 1 0.1 0.316 35.1% 10.0% 9 10 12.5 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 100.0% 0 10	Goodnes	s-of-Fit	Pearson C	hi-Sq GOF		0.322				<u> </u>	genity		
Distribution Shapiro-Wilk W Normality 0.971 0.513 0.8998 Normal Distribution			Likelihood	Ratio GOF		0.471	7.81						
C-% Control Type Count Mean Min Max Std Err Std Dev CV% %Effect A B 0 Lab Water Contro 10 1 1 1 0 0 0.0% 0.0% 10 10 6.25 10 1 1 1 0 0 0.0% 0.0% 10 10 12.5 10 0.9 0 1 0.1 0.316 35.1% 10.0% 9 10 25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 0 100.0% 0 10	Distributi	on	Shapiro-W	ilk W Norma	ality		0.513		_				
0 Lab Water Contro 10 1 1 1 0 0 0.0% 0.0% 10 10 6.25 10 1 1 1 1 0 0 0 0.0% 0.0% 10 10 12.5 10 0.9 0 1 0.1 0.316 35.1% 10.0% 9 10 25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 0 100.0% 0 10	Survival Summary						Calcul	ated Variate	e(A/B)				
6.25 10 1 1 1 1 0 0 0.0% 0.0% 10 10 12.5 10 0.9 0 1 0.1 0.316 35.1% 10.0% 9 10 25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 0 100.0% 0 10	C-%				Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
12.5 10 0.9 0 1 0.1 0.316 35.1% 10.0% 9 10 25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 100.0% 0 10	_	Lab V	/ater Contro		1	1	1	0	0		0.0%	10	10
25 10 0.4 0 1 0.163 0.516 129.0% 60.0% 4 10 50 10 0 0 0 0 100.0% 0 10	6.25					1	1	0		0.0%	0.0%	10	10
50 10 0 0 0 0 0 100.0% 0 10	12.5				0.9	0	1	0.1		35.1%	10.0%	9	10
	25				0.4	0	1	0.163	0.516	129.0%	60.0%	4	10
100 10 0 0 0 0 0 100.0% 0 10	50						0		0			0	10
	100			10	0	0	0	0	0		100.0%	0	10

Analyst: QA:

Report Date: Test Code: 02 Apr-13 09:36 (p 2 of 2) 51248 | 18-1180-8439

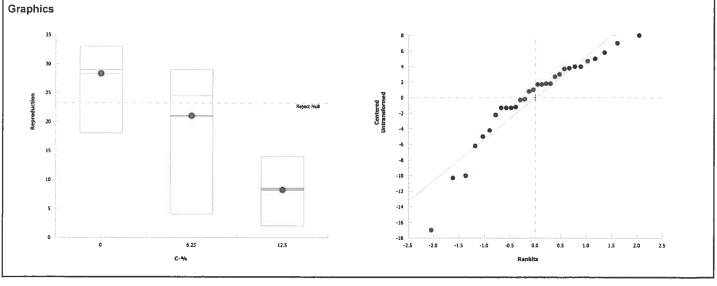
Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk 15-0004-7354 Analysis ID: Endpoint: Survival **CETIS Version: CETISv1.8.5** 02 Apr-13 9:04 Analyzed: Analysis: Linear Regression (MLE) Official Results: Yes Graphics Log-Normal [NED=A+B*log(X)] 1.01 0.20 0.71 0.15 0.05 -0.05 -0.10 -0.15 0.30 -0.20 -0.25 -0.30 0.10 -0.35 -0.5 0.5 -1.5 -1.0 1.0 0.40 0.35 0.35 0.30 0.30 0.25 0.25 0.20 0.20 0.15 0.10 0.05 0.05 0.00 -0.05 -0.05 -0.10 -0.15 -0.15 -0.20 -0.20 -0.25 -0.25 -0.30 -0.30 -0.35



Report Date: Test Code: 02 Apr-13 10:15 (p 1 of 1) 51248 | 18-1180-8439

							lest	Code:		51246 1	8-1180-8439
Ceriodaphnia Sur	vival and Reprod	uction Test								Paci	ic EcoRisk
,	8310-8510 Apr-13 10:14	•	eproduction rametric-Cor	ntrol vs	Treat	ments	CETIS Version: CETISV Official Results: Yes			1.8.5	
Data Transform	Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed	NA	C > T	NA	NA			17.9%	<6.25	6.25	NA	>16
Dunnett Multiple (Comparison Test							· ·			
Control vs	C-%	Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision	(a:5%)		
Lab Water Control	6.25*	2.87	2	5.08	18	0.0074	CDF	Significar	nt Effect		
	12.5*	7.91	2	5.08	18	<0.0001	CDF	Significar	nt Effect		
ANOVA Table											
Source	Sum Squares	Mean Sq	uare	DF		F Stat	P-Value	Decision	(a:5%)		
Between	2070.467	1035.233		2		32.1	<0.0001	Significar	nt Effect		
Error	871.7	32.28519	ı	27							
Total	2942.167			29		_					
Distributional Tes	ts										
Attribute	Test		Test Stat	Critica	al	P-Value	Decision	a:1%)			
Variances	Bartlett Equality	of Variance	6.74	9.21		0.0344	Equal Var	iances			
Distribution	Shapiro-Wilk W	Normality	0.904	0.903		0.0106	Normal Di	stribution			

6.0/											
C-% Co	ntrol Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0 Lat	b Water Contr	10	28.3	25.3	31.3	29	18	33	1.33	14.9%	0.0%
6.25		10	21	15.2	26.8	24.5	4	29	2.57	38.7%	25.8%
12.5		10	8.2	5.61	10.8	8.5	2	14	1.14	44.1%	71.0%



CETIS Analytical Report

Report Date:

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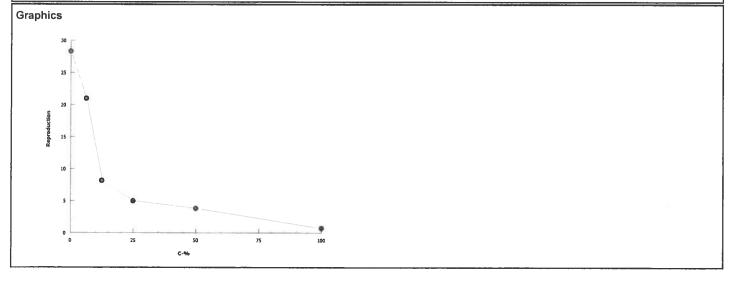
Test Code:

51248 | 18-1180-8439

Ceriodaphnia	Survival and Repre	oduction Test				Pacific EcoRisk
Analysis ID:	07-5980-9536	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.5	··
Analyzed:	02 Apr-13 9:35	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes	

Linear	Interpola	tion Options						
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method	
Linear		Linear	1686	5003	200	Yes	Two-Point Interpolation	
Point E	stimates							
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	1.21	0.679	4.25	82.54	23.53	147.3		
IC10	2.42	1.36	6.49	41.27	15.42	73.66		
IC15	3.63	2.04	6.93	27.51	14.42	49.11		
IC20	4.85	2.72	7.45	20.64	13.43	36.83		
IC25	6.06	3.39	7.95	16.51	12.57	29.46		
IC40	8.21	5.43	9.58	12.18	10.44	18.42		
IC50	9.59	7.34	10.7	10.42	9.309	13.62		

Reproduction Sun	nmary				C	Calculated Va	riate		
-% Contr	ol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
Lab V	Vater Contro	10	28.3	18	33	1.33	4.22	14.9%	0.0%
25		10	21	4	29	2.57	8.12	38.7%	25.8%
.5		10	8.2	2	14	1.14	3.61	44.1%	71.0%
		10	5	3	6	0.365	1.15	23.1%	82.3%
		10	3.8	1	6	0.49	1.55	40.8%	86.6%
0		10	0.7	0	4	0.473	1.49	213.0%	97.5%





(Client:			Lehigh P	ermanent	e			laterial:]	Pond 4	A			Те	st Date:	3/26/13
Pro	ject #:	20	780	-	Test ID:	512	48		Random	ization:		10.6	.13	nu.		Contro	Water:	Modified EPAMH
	Day	pH New	Old	D.O. New	Old	Cond. (µS/cm)	Temp (°C)	A	В	С			Reproduc					SIGN-OFF
818888	0	7.96		9.9		346	25.4		0	٥	D	E	F	G •	Н	I	J	Date: 324/13 New Wg: Test Init. Sol'n Prep Time: 1455
	1	8.02	8.02	7.4	7.8	342	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3/2713 New WQ: Fail: Counts: K&
	2	1.96	7.93	1.6	7.1	335	25.9	0	0	0	0	D	0	0	٥	0	<u>გ</u>	Sol'n Prep: Old WQ: TLA Time: 55
trol	3	8.06	7.99	8-1	8.6	357	25:7	٥	o .	0	0	D	5	0	6	v	5	Date: 3.25 New WQ: P. Counts: A. Sol'n Prep: Old WQ: Time: 130
Lab Water Control	4	7.43	7.97	7.8	7.6	332	25.7	6	5	6	4	3	O	5	4	4	.0	Date: 3.30, J3New WQ: PH Counts: Sol'n Prep. Old WQ: WO Time: Sol
Lab Wa	5	8.08	8.11	8.7	7.5	339	25.7	15	10	la	В	10	10	10	pt	10	12	Date: 3.1. Jew WQ: TO County Sol'n Prep: Old WQ: RA Time US 6
	6	8.06	8.06	8.4	7.7	346	75.8	15	13	0	12	4	17	15	15	13	14	Date 1/1/3 New WO Counts Sol'n Prep: 93 Old WQ: WY Time 500
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: Old WQ: Counts: Time:
unanana.							Total=	33	28	185	27	27	32	30	36	27	31	Mean Neonates/Female = 28.3
	Day	P New	H Old	New	.O. Old	Cond. (µS/cm)		Α	В	С	Surviva D	l / Repro E	duction F	G	Н	I	J	Sample ID
	0	7.68		9.0		428		0	0	0	0	0	0	0	0	o	0	31333
	1	7.98	7.92	8.2	8.0	420		0	0	0	0	0	0	0	0	0	0	31333
	2	7.91	7.85	7.9	7.6	415		0	6	0	O	ဝ	0	0	0	ð	ð	31377
	3	8.02	8.04	7.9	8.4	407		0	0	0	0	0	0	D	0	0	4	31377
6.25%	4	7,43	7.98	7.8	28	314		6	S	8	4	4	3	5	5	S	Ő	31431
9	5	1 1 9	8.05	8,7	7.7	425		ĺĐ	10	11	7	0	9	H	ч	0	ති	31431
	6	8-01	8.07	8.3	7.0	420		0	9	9	Ó	٥	13	13	10	13	10	31431
	7			381113181818														000000000000000000000000000000000000000
	8							2		-					4			
							Total=	16	24	25	77	4	75	29	26	78	22	Mean Neonates/Female = 21-0

	Client:		1	Lehigh P	ermanent	e		N	laterial:			Pond 4	4			Те	st Date:	:3/26/13
Pro	ject #:		780		Test ID:	512	48									Contro	l Water:	: Modified EPAMH
	Day	pH New	Old	D.O. New	Old	Cond. (µS/cm)	Temp (°C)	A	В	С			Reproduci					SIGN-OFF
	0										D	Е	F	G	Н	I	J	
	I	7.87		8.8	8.0	504 486		6	0	0	6	0	0	0	0	0	0	
	2	7.90	7.84	8.1	7.8	493		0	0	0	0	0	0	0	0	0	0	
	<u> </u>							Ø	0	_0	9	0	ی	0	0	0	Ø	
	3	8.02	8.09	7.9	8.3	500		0	0	0	0	0	0	٥	0	0	Q	
12.5%	4	7.92	8-04	8.1	8.0	490		4	3	4	a	5	5	4	4	5	6	
-	5	7.93	8.08	8.8	7.8	503		o	11	0	0	٥	0	4	3	7	3	
	6	797	8.13	8.3	7.6	496		XIG	0	O	6	N	5	0	0	0	0	
	7					,		-										
	8							-										
							Total=	X/U	M	3	2	10	10	ક	7	12	9	Mean Neonates/Female = 8.7
	Day	New P	H Old	D. New	O. Old	Cond. (µS/cm)		A	В	С	Surviva D	l / Repro	duction F	G	Н		J	
8,818,838	0			8.8		634										I		
	1	7.88	7.98		7.g	623		0	6	0	6	0	0	0	0	0	0	
	2		7.10					0	0	0	0	0	0	0	0	0_	0	
	<u> </u>	1.92			7.8	627		0	0	0	ပ	ဝ	0	0	ව	0	•	
1	3		8.16	7.9		629		0	3	ס	0	2	Ó	Ó	0	0	5	
25%	4		8.12		7.6	619		6	4	6	4	×/3	X/4	(x/5	4	0	
	5	7.93	8.11	8.9	7.7	634		o	×/0	Ö	o	-	_	0	(4	0	1	
	6	797	8.21	8.6	7.7	630		X/O	~	()	0	-	,	0	-	X/O	0	
12	7			·				-	_			^	-		_	7		
10	8		1					~	_		-	- /	-			-	7.	
							Total=	¥ζ	×/4	۲	4	1/3	Yla	ر	×15	44	4	Mean Neonates/Female = 50

C	lient:	<u>-</u>	1	Lehigh Po	ermanent	е	_	_ N	laterial:]	Pond 4	4			Te	st Date:	3/26/13
Proj	ect #:	20	780		Test ID:	512	48	_								Contro	Water:	Modified EPAMH
	Day	рН		D.O.		Cond.	Temp						Reproduc	ion				SIGN-OFF
		New	Old	New	Old	(μS/cm)	(°C)	A	В	С	D	Е	F	G	Н	I	J	SIGNOT
	0	7.95		8.9		891		0	0	_0_	0	0	0	0	0	0	G	
	ī	7.98	7.99	8.6	7.4	876		0	0	0	0	0	0	0	0	0	0	
	2	7.98	7.81	8.3	7.5	812		υ	٥	o	G	0	ø	0	0	Ó	၀	
	3	8.16	8.17	7.9	8.3	873		0	0	٥	ð	O	0	٥	0	٥	٦	
%05	4	798	81.8		7.6	856		4	a	×/5		×/4	×/4	×/5	X/5	×/1	0	
25	5	7.93			7.7	870		×/0	0	-	-	_	_	_	_	-	O	
]. 1		794				869		-	×lo	,	_	_	_	_	_	•	X/O	
	7	1-/	0.10	004	. 0			_	1	•			-	_	_			
	8								-							1	~	
							Total=	7/4	X/7.	7/5	¥/3	7/4	×/6	×/5	x/5	x/,	742	Mean Neonates/Female = 3.8
	Day	p	H	D.	О.	Cond.			116		()	/ Repro	<u> </u>	/ 3	13		13	Mean Neonates/Female = 3.8
	7	New	Old	New	Old	(µS/cm)		A	В	С	D	Е	F	G	Н	I	J	
	0	7.90		9.1		1335		٥	0	0	0	0	0	0	0	9	0	
	I	7.95	7.93	8.8	7.8	1321		0	0	0	0	0	0	0	0	0	0	
	2	8.09	7.77	0.8	7.7	1301		0	0	0	0	0	၁	0	0	0	0	
	3	818	8.05	8.2	8.3	1314		'n	0	0	0	D	O	ঠ	<i>a</i>	Э	Q	
%001	4	7.48	8-06		7.6	1261			×/4	No	*/o	*/0	*6	×/0	¥/6	×/0	×/6	
°	5			9.5	7.7	1298		r/.	-	_	_	_	_	1	-	_		
	6	792	_	9.0	-	1298		-	-	_	_		_	_		~	_	
	7	, ,				100.10			_	-	_	_		1	_			
	8		, =						_		-	•	•	-		-	<u>۔</u> ر	
							Total=	1/3	XI4	۵/۶	4/0	×/0	×lo	7/0	7/2	×/0	Mo	Mean Neonates/Female = 0.7

CETIS Analytical Report

Report Date: Test Code: 02 Apr-13 09:36 (p 2 of 2)

.

51248 | 18-1180-8439

Ceriodaphnia	a Survival and Re	produ	uction Test						Pacific EcoRis
Analysis ID: Analyzed:	08-1864-1887 02 Apr-13 9:03		Endpoint: Su Analysis: Si	ırvival ngle 2x2 Cor	ntingency Ta	ble	CETIS Version: Official Results:	CETISv1.8.5 Yes	
Data Transfo	rm	Zeta	Alt Hyp	Trials	Seed		Test Resu	lt	
Untransforme	d		C > T	NA	NA		Passes su	rvival	
Fisher Exact	Test								
Control	vs Control		Test Stat	t P-Value	P-Type	Decision	(a:5%)		
Lab Water Co	ontrol Hardness	Blank	1	1.0000	Exact	Non-Sign	ificant Effect		
Data Summa	ry						=		
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect		
0	Hardness Blank		0	10	1	0	0.0%		
0	Lab Water Cont	10	0	10	1	0	0.0%		
Graphics				_=					
1.0	•		0						
0.9									
0.8									
0.7									
0.6									
0.5									
0.4									
0.3									
0.2									
0.1									
0.0	0		0						
		C-%							

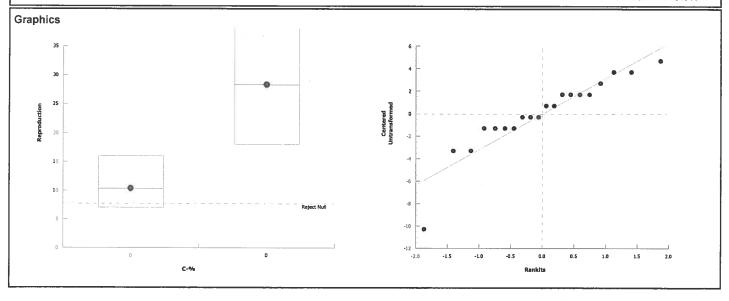


Report Date:

02 Apr-13 09:36 (p 2 of 2)

Test Code: 51248 | 18-1180-8439

														_
Ceriodaphnia	3 Surv	ival and Re	produ	uction Test									Pac	ific EcoRisk
Analysis ID:	03-9	566-6978		Endpoint:	Rep	production				CET	S Version	n: CETISv1	1.8.5	
Analyzed:	02 /	Apr-13 9:35		Analysis:	Par	ametric-Two	Sample)		Offic	ial Result	s: Yes		
Data Transfor	rm		Zeta	Alt I	Нур	Trials	Seed			PMSD	Test Res	sult		_
Untransformed	d		NA	C > 1		NA	NA			9.23%	Fails rep	roduction		
Equal Variand	ce t Tv	wo-Sample	Test											
Control	vs	Control		Test	Stat	Critical	MSD	DF	P-Value	P-Type	Decisio	n(α:5%)		
Lab Water Co	ntrol	Hardness	Blank	11.9		1.73	2.61	18	<0.0001	CDF	Significa	int Effect		
ANOVA Table)													
Source		Sum Squa	ires	Mear	ı Squ	are	DF		F Stat	P-Value	Decisio	n(α:5%)		
Between		1620		1620			1		143	<0.0001	Significa	nt Effect		
Error		204.2		11.34	1444		18							
Total		1824.2					19							
Distributional	l Test:										· <u></u>	-	-	
Attribute		Test				Test Stat	Critica	ıl	P-Value	Decision	α:1%)			
Variances		Variance I	Ratio I	=		3.63	6.54		0.0683	Equal Var	iances			
Distribution		Shapiro-W	Vilk W	Normality		0.877	0.866		0.0159	Normal D	stribution			
Reproduction	Sum	mary										- <u>-</u>		
C-%	Cont	rol Type	Cour	nt Mear	1	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab V	Vater Contr	10	28.3		25.3	31.3		16	18	33	1.33	14.9%	0.0%
0	Hard	ness Blank	10	10.3		8.72	11.9		16	7	14	0.7	21.5%	63.6%





(Client:		1	Lehigh Po	ermanent	te		. M	laterial:		Hard	ness Co	ontrol			Те	st Date:	3/26/13
Pro	ject #:	207	780		Test ID:	512	48	·	Random	ization:		10.2	.1			Contro	l Water:	Modified EPAMH
	Day	рН		D.O.	,	Cond.	Temp				Su	rvival / R	eproduci	tion				SIGN-OFF
		New	Old	New	Old	(μS/cm)	(,C)	Α	В	С	D	Е	F	G	Н	1	J	Sidiv-Off
	0	8.63		9.9		2406	25.4	0	0	0	0	0	0	0	0	0	0	Date: 3/26/13 New WQ: Test Init. Sol'n Prep: 7/55
	ı	8.67	8.55	8-8	7.6	2415	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3/n R New WQ: FOR Counts KB Sol'n Prep: Old WQ: TCA Time 556
	2	8.58	9.45	8.2	7.9	2447	25.9	0	0	0	0	O	0	0	O	9	0	Date: 3.28 New WQ: DS Counts: Sol'n Prep: Old WQ: M Time: SO
trol	3	8.63	8.109	8.2	8.4	2449	اند	0	0	0	4	a	0	0	9	6	2	Date: 3.23.13 New WQ: RS Counter: Sol'n Prep: Old WQ: #3 Time 7.30
ss Control	4	3.61	8.63	8.2	7.8	2414	25.7	3	2	0	0	0	0	3	2	1	0	Date: 3.30 New WQ: DH Counts Sol'n Prep: Old WQ: Time: 500
Hardness	5	8.59	8.65	9-2	7.8	2484	25.7	_ 2	2	4	a	0	4	0	3	Ç	Ó	Date: 3.31.13 New WQ! TOV7 Counts Sol'n Prep: Old WQ: RA Time;
Ŧ	6	8.62	18.49	9-3	7.7	2476	75.8	5	3	9	S	5	5	9	Ce	7	9	Date: 4 New WQ! Counts Sol'n Prep: Old WQ: SV Time 1500
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8			-							-							Date: New WQ: Counts
							Total=	10	7	16	12	フ	9	17	11	14	11	Sol'n Prep: Old WQ: Time: Mean Neonates/Female = 10.3

Sample 10 #31337

(Client:			Lehigh Po	ermanent	e		Material:	Meter IDs	Test Date:	3/26/1	3	
Pro	ject #:	20^	780		Test ID:	512	48	_		Control Water:	Mo	odified EPAN	1H
	Day	New P	H Old	D New	.O.	Cond. (µS/cm)	Temp (°C)					SIGN-OFF	
	0	p1+16		R004		E07	36A				Date: 3/26/13	New WO:	Old WQ
	1	PH 12	PHI9	RD07	P067	Ecou	36A				3/27/13	New WQ:	Old WQ
	2	oH 16	4461	R007	12007	E-04	30A				Date: 3-28-/3	New WQ:	Old WO
	3	PH 15	PH15	4007	RDOT	607	30A				Date: 3-29-13	New WQ:	old wo
Meter ID's	4	PH15	pH15	R006		_	30A				Date: 3.30.13	New WO:	Old WQ.
Met	5	PHI9	PHG	P004	R007	ECG6	30 A				Date: 3(3)/13	New WO:	Old WQ
	6	Ph 15	PH16	PLO6	FD07	Ecoc	36A				4/1/13	New WQ:	SVV
	7										Date:	New WQ:	Old WQ:
	8										Date:	New WQ:	Old WQ

Appendix G

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 9 Site Water to Ceriodaphnia dubia



Report Date:

02 Apr-13 09:46 (p 1 of 2)

Test Code:

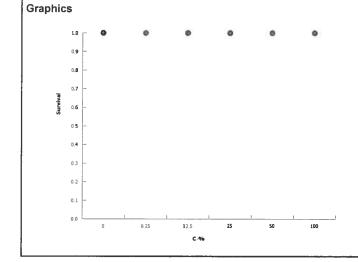
Ceriodaphnia	Survival and Re	produc	ction Test								Pacif	ic EcoRisk
Batch ID: Start Date: Ending Date: Duration:	09-5724-0239 26 Mar-13 15:10 01 Apr-13 16:00 6d 1h) :	Test Type: Protocol: Species: Source:	Reproduction-S EPA-821-R-02- Ceriodaphnia d In-House Cultu	013 (2002) ubia		E	Analyst: Diluent: Brine: Age:	Labora	da Hooper atory Wate oplicable		
	02-4681-0229 25 Mar-13 12:20 25 Mar-13 15:30 27h (13 °C)) :	Code: Material: Source: Station:	Pond 9 Effluent Lehigh Perman Pond 9	ente			Client: Project:	Lehigh 20780	n Permane	ente	
Comparison S	Summary						· · · · · · ·					
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU	Meti	hod			
16-9979-7834 14-5275-7722 11-9776-1723 10-4266-2855			<0 100 0 100	0 >100 >0 >100	NA NA	5.9% 11.1% NA NA	1	Dun Fish	nett Mul er Exac	ltiple Com t Test	Sample Te parison Te ni-Holm Te	st
Point Estimat	e Summarv											
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	Meti	hod			
08-7165-8890 Reproduction	Reproduction		IC5 IC10 IC15 IC20 IC25 IC40 IC50	66.7 83.4 >100 >100 >100 >100 >100	62.3 75.6 N/A N/A N/A N/A N/A	73.9 97.9 N/A N/A N/A N/A N/A	1.499 1.199 <1 <1 <1 <1 <1 <1	Line		polation (IC	CPIN)	
C-%	Control Type	Count	t Mean	95% LCL	95% UCL	Min	Max	Std	Err :	Std Dev	CV%	%Effect
0	Hardness Blank		10.3	9.47	11.1	7	14	0.7		2.21	21.5%	0.0%
0 6.25 12.5 25 50 100	Lab Water Contr	10 10 10 10 10	28.9 32 32.8 33.5 33.3 27.3	28.1 30.9 31.5 31.8 32.4 26.5	29.7 33.1 34.1 35.2 34.2 28.1	25 28 25 24 31 25	33 37 36 42 38 31	0.69 0.94 1.11 1.46 0.80 0.68	3 :	2.18 2.98 3.52 4.62 2.54 2.16	7.55% 9.32% 10.7% 13.8% 7.63% 7.92%	-181.0% -211.0% -218.0% -225.0% -223.0% -165.0%
Survival Sum	marv											
C-% 0 0 6.25 12.5	Control Type Hardness Blank Lab Water Contr		1 1 1 1 1 1	95% LCL 1 1 1	95% UCL 1 1 1	Min 1 1 1 1	Max 1 1 1 1	Std 0 0 0 0	(Std Dev 0 0 0 0	0.0% 0.0% 0.0% 0.0%	%Effect 0.0% 0.0% 0.0% 0.0%
25 50 100		10 10 10 10	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	0 0	1	0 0 0 0	0.0% 0.0% 0.0%	0.0% 0.0% 0.0%

Report Date: Test Code: 02 Apr-13 09:46 (p 2 of 2)

							162	t Code:		31249 1	5-1309-8293
Ceriodaph	nnia Survival and Re	production	on Test		•					Paci	ic EcoRisk
Reproduc	tion Detail							•			
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	10	7	10	12	7	9	12	11	14	11
0	Lab Water Contr	29	29	33	27	30	25	30	29	27	30
6.25		34	30	30	32	33	37	36	31	29	28
12.5		35	31	34	36	34	36	33	29	35	25
25		33	32	24	34	42	36	37	31	32	34
50		31	31	35	36	35	33	38	32	31	31
100		25	26	25	25	29	31	29	26	29	28
Survival D	etail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1	1	1	1	1	1	1	1	1	1
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1 =	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	1	1	1	1	1	1	1	1
Survival B	inomials	:									
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0	Lab Water Contr	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

Report Date: Test Code: 02 Apr-13 09:38 (p 1 of 1)

							rest	Jode:		51249 1	5-1309-6293
Ceriodaphni	a Survival and Re	produ	uction Test							Paci	fic EcoRisk
Analysis ID: Analyzed:	10-4266-2855 02 Apr-13 9:17		•	vival P 2x2 Conti	ngency Tabl	es		S Version: al Results:	CETISv Yes	1.8.5	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed			NOEL	LOEL	TOEL	TU
Untransforme	ed		C > T	NA	NA			100	>100	NA	1
Fisher Exact	/Bonferroni-Holm	Test									
Control	vs C-%		Test Stat	P-Value	P-Type	Decision	(a:5%)				
Lab Water Co	ontrol 6.25		1	1.0000	Exact	Non-Sign	ificant Effect				
	12.5		1	1.0000	Exact	Non-Sign	ificant Effect				
	25		1	1.0000	Exact	Non-Sign	ificant Effect				
	50		1	1.0000	Exact	Non-Sign	ificant Effect				
	100		1	1.0000	Exact	_	ificant Effect				
Data Summa	ry										
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect				
0	Lab Water Cont	10	0	10	1	0	0.0%				
6.25		10	0	10	1	0	0.0%				
12.5		10	0	10	1	0	0.0%				
25		10	0	10	1	0	0.0%				
50		10	0	10	1	0	0.0%				
100		10	0	10	1	0	0.0%				



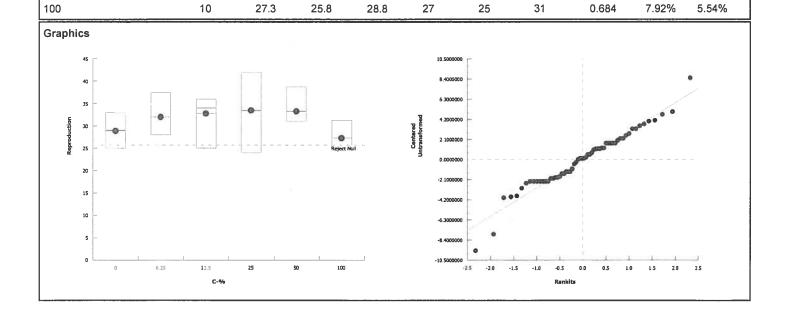


Report Date:

02 Apr-13 09:37 (p 1 of 1)

Test Code: 51249 | 15-1309-8293

Ceriodaphnia	Survival and Re	producti	ion Test					·			Paci	fic EcoRisI
Analysis ID: Analyzed:	14-5275-7722 02 Apr-13 9:37		•	oroduction ametric-Con	trol vs T	reat	ments		IS Version		.8.5	
Data Transfor	m	Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed	1	NA	C > T	NA	NA			11.1%	100	>100	NA	1
Dunnett Multi	ple Comparison	Test										
Control	vs C-%		Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision	n(α:5%)		
Lab Water Co	ntrol 6.25		-2.22	2.29	3.2	18	0.9998	CDF	Non-Sigr	nificant Effect	t	
	12.5		-2.79	2.29	3.2	18	1.0000	CDF	Non-Sigr	nificant Effect	t	
	25		-3.29	2.29	3.2	18	1.0000	CDF	Non-Sigr	nificant Effect	t	
	50		-3.15	2.29	3.2	18	1.0000	CDF	Non-Sign	nificant Effect	t	
	100		1.15	2.29	3.2	18	0.3528	CDF	Non-Sigr	nificant Effect	t	
ANOVA Table												
Source	Sum Squa	ires	Mean Squ	are	DF		F Stat	P-Value	Decision	ι(α:5%)		
Between	333.4		66.68		5		6.83	<0.0001	Significa	nt Effect		
Error	527.2		9.762963		54							
Total	860.6				59							
Distributional	Tests											
Attribute	Test			Test Stat	Critica	ı	P-Value	Decision	(α:1%)			
Variances	Bartlett Ed	quality of	Variance	8.08	15.1		0.1518	Equal Var	riances			
Distribution	Shapiro-W	Vilk W No	ormality	0.965	0.946		0.0808	Normal D	istribution			
Reproduction	Summary		×									
C-%	Control Type	Count	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	10	28.9	27.3	30.5		29	25	33	0.69	7.55%	0.0%
6.25		10	32	29.9	34.1		31.5	28	37	0.943	9.32%	-10.7%



36.8

35.1

33.5

32.5

24

31

42

38

1.46

0.803

-15.9%

-15.2%

13.8%

7.63%

25

50

10

10

33.5

33.3

30.2

31.5

CETIS Analytical Report

Report Date:

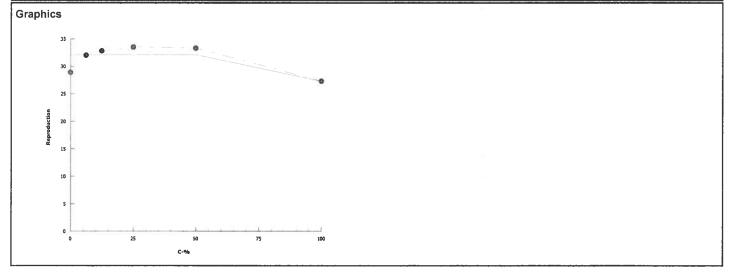
02 Apr-13 09:37 (p 1 of 1)

Test Code:

Ceriodaphnia	Survival and Repro	duction Test				Pacific EcoRisk
Analysis ID:	08-7165-8890	Endpoint:	Reproduction	CETIS Version:	CETISv1.8.5	
Analyzed:	02 Apr-13 9:37	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes	

Linear	Interpola	tion Options						
X Trans	sform	Y Transform	Seed	d	Resamples	Exp 95% CL	Method	
Linear		Linear	1723	3441	200	Yes	Two-Point Interpolation	
Point E	stimates							
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	66.7	62.3	73.9	1.499	1.352	1.606		
IC10	83.4	75.6	97.9	1.199	1.022	1.323		
IC15	>100	N/A	N/A	<1	NA	NA		
IC20	>100	N/A	N/A	<1	NA	NA		
IC25	>100	N/A	N/A	<1	NA	NA		
IC40	>100	N/A	N/A	<1	NA	NA		
IC50	>100	N/A	N/A	<1	NA	NA		

Reprodu	ection Summary				C	Calculated Va	ariate			
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contro	10	28.9	25	33	0.69	2.18	7.55%	0.0%	
6.25		10	32	28	37	0.943	2.98	9.32%	-10.7%	
12.5		10	32.8	25	36	1.11	3.52	10.7%	-13.5%	
25		10	33.5	24	42	1.46	4.62	13.8%	-15.9%	
50		10	33.3	31	38	0.803	2.54	7.63%	-15.2%	
100		10	27.3	25	31	0.684	2.16	7.92%	5.54%	



(Client:		1	Lehigh Po	rmanent	e		M	laterial:			Pond 9				Те	st Date:	3/26/13
Pro	ject #:	20	780		Test ID:	512	49	F	Random	ization:		10.7	3				Water:	, -
	Day	pН		D.O.		Cond.	Temp				Su	rvival / R	eproduct	ion				SIGN-OFF
		New	Old	New	Old	(µS/cm)	(°C)	Α	В	C	D	Е	F	G	Н	1	J	
	0	7.94		8.6		344	25.6	0	0	0	0	0	0	0	0	0	0	Date: 3/24/3 New WQ: Test Init Sol'n Prep: Time: 15/0
	1	7.96	8.05	8.3	7.3	335	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3 27-13 New WQ: FOLS Counts: Le Sol'n Prep: Old WQ: TLA Time: 1440
	2	7.92	8.00	8.3	1.7	4100	25.9	0	0	0	G	U	δ	0	0	0	0	Date: 3.38.73 New WQ: DS Counts Sol'n Prep: Old WQ: AL Time: 1945
- P	3	7.88	1.89	8.4	8-/	242	25.7	o	0	0	٥	٥	٥	0	0	0	0	Date: 3.21.13 New WQ: 04 Counts: Sol'n Prep: Old WQ: 26 Time: 515
r Conti	4	7.88	7.86	7.9	8-1	343	25.7		ی	S	ü	4	4	ч	5	5	5	Date: 3.30 3 lew WQ: OLJ Counts Sol'n Prep: Old WQ: DS Time 6.00
Lab Water Control	5	7.00	8.18		7.3	348	25.7	1)	10)2	9	10	9	10	9	10	9	Date: 3.31 J3 New WOFONS Counts WO Sol'n Prep: Old WQ: RA Time: (1)
La			8.07		7.7	347			13	14	14	16	12	16	15		16	Date: New World Counts: Sol'n Prep: Old WQ: Time (COO
	7	9-10	0.0	Q ~ V		217	0,0	()	12	19	1 1	10	10	7.0	ردا	10	19	Date: New WQ: Counts:
	8																	Sol'n Prep: Old WQ: Time: Date: Old WQ: Counts: Time:
							Total=	29	79	33	27	30	25	30	79	77	30	Mean Neonates/Female = 28.9
	Day	р	H	D.	О.	Cond.				- حال		l / Repro		<u> </u>		0 /		
		New	Old	New	Old	(µS/cm)		Α	В	С	D	Е	F	G	Н	I	J	Sample ID
	0	7.86		8.7		428		0	0	0	0	σ	0	٥	0	0	0	31334
	1	7,92	7.99	8.3	7.6	418		0	6	0	6	0	0.	0	0	0	0	31334
	2	291	3.07	8.0	6.8	419		0	0	٥	0		0	D	ఎ	0	0	31378
	3	7.89	8.02	8.3	8.2	427		0	J	Ø	ن ن	0	0	9	٥	9	O	/ 31378
6.25%	4	7.87	1.93	8.0	8.2	428		5	6	60	9	4	(4	G	4	4	5	31432
6.	5	7.92	8.08	8.8	7.5	423		П	10	9	10	12	13	13	11	11	10	31432
	6 .	8-07	8.05	8-3	7.8	429		18	15	9	1	17	19	17	16	14	13	31432
	7													'				
	8																	
							Total=	34	36	36	37	33	37	36	31	29	28	Mean Neonates/Female = 32-6

(Client:		1	Lehigh Pe	rmanent	e		M	laterial:			Pond 9	l			Tes	st Date:	3/26/13
Pro	ject #:	207	780		Test ID:	512	49	_								Control	Water:	Modified EPAMH
	Day	рН	8	D.O.		Cond.	Temp						eproduct					SIGN-OFF
		New	Old	New	Old	(μS/cm)	(°C)	Α	В	С	D	Е	F	G	Н	I	J	
	0	7.50		***		510		0	G	σ	O	O	0	0	0	0	0	
	1	7.88	7.99	8.2	7.6	493		0	0	0	0	0	0	0	0	0	0	
	2	1.90	8.09	1.9	7.3	491		0	0	ဝ	O	0	0	O	υ	0	0	
	3	7.84	8-11	8.2	8.4	507		0	ð	б	٥	Q	5	G	0	0	٥	
2%	4	7.83				512		5	6	5	Ç	5	6	D	*	٩	5	
12.5%	-	7.88		\vdash	7.5	505		13	12	11	13	11	13	10	41	13	0	
		8.02				510		17	13		17			17	14			
	7	0 20 20	010	0,2	140	510		' /	13	18	1./_	18	ાજ	1/	1-1	16		
	8			********									k I					
	88888						_	7-	7.	200			0:		20.	20	26	22.8
	Dav		H	D		Cond	Total=	35	31	34		34		33	29	35	25	Mean Neonates/Female = 32・8
	Day	p New	H Old	D. New	O.	Cond. (µS/cm)	Total=	35 A	31 B	34		34 1 / Reprod		33	29 H	35	25	Mean Neonates/Female = 32・8
	Day 0	New	Old		,		Total=				Surviva	l / Reprod E	duction					Mean Neonates/Female = 32.8
	0	New 7.75	Old	New	,	(μS/cm)	Total=	A 0	В	C 0	Surviva D O	E C	F 0	G •	Н	I 0	J	Mean Neonates/Female = 32.8
	0	New 7.25 7.85	8.01	8.3	Old 7.4	(μS/cm) 649 625	Total=	А О	В О	с 0	D O	E O	F O	G 0	н 0	0 0	0	Mean Neonates/Female = 32.8
	0	New 7.25 7.85 7.90	8.01	8.3 8.3	7.4 7.2	(µS/cm) 649 625 646	Total=	A 0 0	В О О	с 0 0	D O O	E O	F O	G 0	H 0	0 0	0	Mean Neonates/Female = 32.8
9	0 1 2	New 7.25 7.85 7.90 7.88	8.01 8.13 8.14	8.3 8.3	7.4 7.2 84	649 625 646 652	Total=	A 0 0 0 0 0 0	В О О	c	Surviva D O O O	Property of the control of the contr	F O	G O O O	H 0 0	0 0	0 0	Mean Neonates/Female = 32.8
25% ₆	0 1 2 3 4	New 7.25 7.85 7.90 7.88 7.82	8.01 8.13 8.14 8.07	8.3 8.3 8.3 8.2	7.4 7.2 84 8.3	649 625 646 652 663	Total=	A O O O O G	В 0 0 0 5	C O O O O O	Surviva D O O O T	Proposed Pro	duction F O O O T	G O O O G O O	H 0 0 0 0 5	0 0 0 5	0 0 0 4	Mean Neonates/Female = 32.8
259%	0 1 2 3 4 5	New 7.25 7.85 7.90 7.88 7.82 7.81	8.01 8.13 8.4 8.07 8.17	8.3 8.3 8.3 8.2 8.7	7.4 7.2 84 8.3 7.7	649 625 646 652 663	Total=	A 0 0 0 0 0 6 P2	B O O S 5 13	C 0 0 0 0 0 0 14	Surviva D O O O T 12	/ Repro	o O O T	G O O O G I3	H 0 0 0 0 0 5 10	0 0 0 5	0 0 0 4 0 14	Mean Neonates/Female = 32.8
25%	0 1 2 3 4 5 6	New 7.25 7.85 7.90 7.88 7.82	8.01 8.13 8.14 8.07	8.3 8.3 8.3 8.2 8.7	7.4 7.2 84 8.3 7.7	649 625 646 652 663	Total=	A O O O O G	В 0 0 0 5	C O O O O O	Surviva D O O O T	Proposed Pro	duction F O O O T	G O O O G O O	H 0 0 0 0 5	0 0 0 0 5	0 0 0 4	Mean Neonates/Female = 32.8
25%	0 1 2 3 4 5 6 7	New 7.25 7.85 7.90 7.88 7.82 7.81	8.01 8.13 8.4 8.07 8.17	8.3 8.3 8.3 8.2 8.7	7.4 7.2 84 8.3 7.7	649 625 646 652 663	Total=	A 0 0 0 0 0 6 P2	B O O S 5 13	C 0 0 0 0 0 0 14	Surviva D O O O T 12	/ Repro	o O O T	G O O O G I3	H 0 0 0 0 0 5 10	0 0 0 5	0 0 0 4 0 14	Mean Neonates/Female = 32.8
25%	0 1 2 3 4 5 6	New 7.25 7.85 7.90 7.88 7.82 7.81	8.01 8.13 8.4 8.07 8.17	8.3 8.3 8.3 8.2 8.7	7.4 7.2 84 8.3 7.7	649 625 646 652 663		A 0 0 0 0 0 6 P2	B 0 0 5 13	C 0 0 0 0 0 4 14	Surviva O O O T I2	/ Reprod	o O O O O O O O O O O O O O O O O O O O	G O O O G I3	H 0 0 0 0 5 10 10	0 0 0 5	0 0 0 4 0 14	Mean Neonates/Female = 32.8

(lient:		I	ehigh Pe	rmanent	e		M	laterial:			Pond 9				Tes	st Date:	3/26/13
Pro	ect#:	20	780		Test ID:	512	49									Control		
	Day	рН		D.O.		Cond. (µS/cm)	Temp (°C)					vival / R	<u> </u>					SIGN-OFF
		New	Old	New	Old	(µS/cm)	(C)	Α	В	С	D	E	F	G	Н	1	J	
	0	7.67		9.1		915		0	0	0	0	0	0	0	စ	0	0	
	1	7.78	7.99	85	7.2	899		0	0	0	0	0	0	0	0	0	0	
	2	1.95	8.22	8.1	다.1	916		ပ	0	0	0	0	0	ی	0	0	0	
	3	7.87	8.29	8.6	84	925		0	0	Ò	O	6	0	D	0	0	4	
20%	4	7.77	8.24	8.3	8.7	945		£	٥	7	7	0	و	٦	5	٠	0	
5(5	7.75		9.0	7.7	955		12	9	12	に	(3	11	13	j	11	10	
		782		_		943		13	16	16	17	17	9	18	15	14	17	
	7	~~	٠		,,,	,				· ·	1			.,,		,		
	8																_	
							Total=	31	31	35	36	35	33	38	32	31	31	Mean Neonates/Female = 33.3
	Day	<u> </u>	Н	D.		Cond.					Surviva	/ Repro	duction					
	_	New	Old	New	Old	(µS/cm)		Α	В	С	D	Е	F	G	Н	1	J	
	0	7.55		9.3		1409		0	0	0	0	0	0	0	0	٥	0	
	1	7.68	8.06	8.9	7.0	1384		0	٥	٥	0	0	0	0	0	0	0	
	2	1.91	8.13	8.2	7.4	1413		0	6	٥	0	0	ð	٥	0	0	O	
	3	7.89	8.17	8.9	8.3	14:23		٥	0	0	0	4	5	4	4	0	4	
%001	4	7.72	8.21	9.0	8.2	1441		4	5	S	7	0	0	0	6	9	0	
2	5	7.69	8.15	9.8	7.7	1444		10	12	n	16	10	la	۵)	10	9	11	
		770			7.9	1446		11	9	9	11	15	14	15	12	14	13	
	7				•	,					•	•				•		
	8				= 12	= ======			= =	XVa	= 1/2	1,114		=	===			
							Total=	25	24	25	25	29	31	29	26	29	28	Mean Neonates/Female = 27-3

CETIS Analytical Report

0.3

C-%

Report Date: Test Code: 02 Apr-13 09:46 (p 1 of 1)

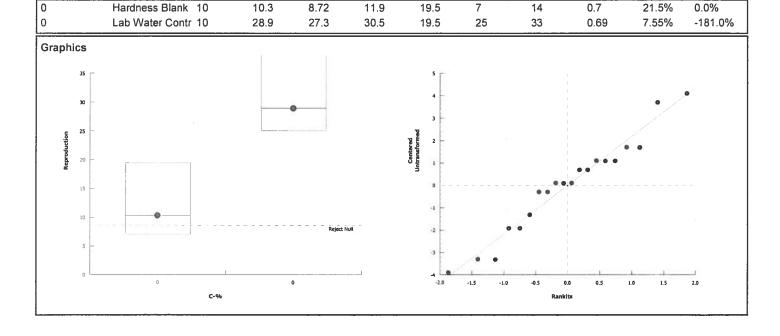
Ceriodaphnia	Survi	val and Re	produ	ction Test						_		Pacific EcoRisk
Analysis ID: Analyzed:		776-1723 pr-13 9:45		Endpoint: Analysis:		vival gle 2x2 Con	tingency Tal	ble		S Version: al Results:	CETISv1.8.5 Yes	
Data Transformed			Zeta	Alt H		Trials NA	Seed NA			Test Resul		
Fisher Exact	-		-						***			
Control	vs	Control		Test	Stat	P-Value	P-Type	Decision(α:5%)			
Lab Water Co	ntrol	Hardness I	Blank	1		1.0000	Exact	Non-Signi	ficant Effect			
Data Summa	ry											
C-%	Cont	rol Type	NR	R		NR + R	Prop NR	Prop R	%Effect			
0	Hardi	ness Blank	10	0		10	1	0	0.0%			
0	Lab V	Vater Cont	10	0		10	1	0	0.0%			
Graphics												
0.9		•			0							

Report Date:

02 Apr-13 09:46 (p 1 of 1)

Test Code: 51249 | 15-1309-8293

Ceriodaphnia	Survi	val and Re	produ	ıction Test									Pac	ific EcoRis
Analysis ID: Analyzed:		979-7834 pr-13 9:45		Endpoint: Analysis:		oroduction ametric-Two	Sample				S Version: ial Results		.8.5	
Data Transfor	m		Zeta	Alt I	⊰ур	Trials	Seed			PMSD	Test Res	ult		
Untransformed	1		NA	C > -	Γ	NA	NA			5.9%	Fails repr	oduction		
Equal Variand	e t Tv	vo-Sample	Test					_						
Control	vs	Control		Test	Stat	Critical	MSD	DF	P-Value	P-Type	Decision	(a:5%)		
Lab Water Cor	ntrol	Hardness	Blank	18.9		1.73	1.7	18	<0.0001	CDF	Significan	t Effect		
ANOVA Table														
Source		Sum Squa	ares	Mea	n Sqı	ıare	DF		F Stat	P-Value	Decision	(a:5%)		
Between		1729.8		1729	.8		1		358	<0.0001	Significan	t Effect		
Error		87		4.83	3333		18							
Total		1816.8					19							
Distributional	Tests	;					-							
Attribute		Test				Test Stat	Critica	I	P-Value	Decision(a:1%)			
Variances		Variance	Ratio I	_		1.03	6.54		0.9679	Equal Var	iances			··-
Distribution		Shapiro-V	Vilk W	Normality		0.959	0.866		0.5177	Normal Di	stribution			
Reproduction	Sumi	mary								-				
C-%	Conti	rol Type	Cour	nt Mea	n	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	Hardr	ess Blank	10	10.3		8.72	11.9		19.5	7	14	0.7	21.5%	0.0%



Analyst: QA:

•	Client:]	Lehigh P	ermanent	e		M	laterial:		Hard	ness C	ontrol			Te	st Date:	3/26/13
Pro	ject #:	20	780		Test ID:	512	48	. F	Random	ization:		10.2	.1			Control	Water:	Modified EPAMH
	Day	pН		D.O.		Cond.	Temp				Su	rvival / F	Reproduc	tion				SIGN-OFF
		New	Old	New	Old	(μS/cm)	(,C)	Α	В	С	Ð	Е	F	G	Н	1	J	
	0	8.63		8.9		2406	25.4	0	0	0	0	0	0	0	0	0	0	Date: 3/21/13 New WQ: Test Init. Sol'n Prep
	I	8.67	8.55	8-8	7.6	2415	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3/21/3 New WQ: FOUR Counts: 1/3 Sol'n Prep: Old WQ: TCA Time 550
	2	8.58	9.45	8.2	7.9	2447	25.9	0	စ	0	0	0	0	o	O	ø	0	Date: 5.28 (S New WQ: D5 Counts Sol'n Prep: Old WQ: M Time 500
trol	3	8.63	8.69	8,2	8.4	2449	ઝત	O	0	0	4	a	0	0	ပ	0	2	Date: 3.23.13 New WQ: 25 Counts Sol'n Prep: Old WQ: 32 Time 732
s Control	4	3.61	8.63	8.2	7.8	2414	25.7	3	2	0	0	0	0	3	2	١	O	Date: 3.30 New WQ: DH Counts Sol'n Prep: Old WQ: Time 1500
Hardness	5	8.59	8.65	9-2	7.8	2484	25.7	Q	S	4	a	0	4	0	3	Ç	Ć	Date: 3.31.13 New WQ! TOV7 Counts Sol'in Prep: Old WQ: RA Times
H	6	8.62	18.49	9-3	7.7	2476	75.8	5	3	6	G	5	5	9	6	7	9	Date: 4 H 7 New WQ: Counts Sol'n Prep: Old WQ: SVV Time: 1500
	7								10									Date: New WQ: Counts Sol'n Prep: Old WQ: Time
	8																	Date: New WQ: Counts Sol'n Prep Old WO: Time:
							Total=	16	7	16	12	フ	9	17	11	14	11	Mean Neonates/Female = 10.3

(Client:		Lehigh Permanente					Material:	Meter IDs	Test Date:	3/26	/13	
Project #:_		207	20780 Test ID			51249				Control Water:	Modified EPAMH		
	Day	pl New	H Old	D.O. New Old		Cond. (µS/cm)	Temp (°C)					SIGN-OFF	
Meter ID's	0	PH 16		RD04		たのみ	30A				Date:	New WQ:	Old WQ
	1	PHIS	PH19	2007	RD07	ECOY	30A				3/27/13	New WQ:	Old WQ:
	2	21416	p416	ROOF			36 A				Date: 3-28-13	New WQ:	Old WO
	3	PHIS	PYKO	RD04	रिक्स	E08	36 A				Date: 3.29.13	New WQ:	Old WQ
	4	PH15	d/H _e	RD6	ROOT	EC07	30/ ^K				3.30.13	New WO: H	205
	5	PHI9	PHG	PDOU	R007	E(06	30A				Date: 3.31.13	New WO:	Old WQ
	6	1415	149	W06	R004	Ecob	30A				4/1/13	New WQ:	Old WOB
	7	_	•								Date:	New WQ:	Old WQ:
	8										Date	New WQ:	Old WQ

Appendix H

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 13 Site Water to Ceriodaphnia dubia



02 Apr-13 10:35 (p 1 of 2)

Test Code:

51250 | 16-0812-6996

Ceriodaphnia	Survival and Re	productio	n Test						<u>.</u>			Pacific	EcoRisk
Batch ID: Start Date: Ending Date: Duration:	10-2188-0206 26 Mar-13 15:35 01 Apr-13 16:45 6d 1h	Pro Spe	t Type: tocol: ecies: urce:	EPA- Cerio					Analyst Diluent Brine: Age:	: Lab	inda Hooper oratory Wate Applicable		
1 '	17-8739-9790 25 Mar-13 11:57 25 Mar-13 15:30 28h (9 °C)) Sou	de: erial: irce: tion:	Pond Efflue Lehig Pond	ent gh Perman	ente			Client: Project		igh Permane 80	ente	
Comparison S	Summary												
Analysis ID	Endpoint		NOEL		LOEL	TOEL	PMSD	TU	N	lethod			
13-8440-1556 11-0244-2636 01-8265-2002 11-0927-4319			<0 <6.25 0 12.5		0 6.25 >0 25	NA 17.68	10.6% 19.6% NA NA	>16 8	S	Steel Ma	riance t Two- ny-One Rank act Test act/Bonferro	Sum Test	
													
Point Estimat	•		1		0/	059/ 1 01	050/ 1101	T	_	1 a 4 la - J			
Analysis ID 21-2010-7883	Endpoint		Level		% 0.724	95% LCL	95% UCL	TU		lethod	ornalatic= /!/	CDIN!	
21-2010-7883	Reproduction		IC5 IC10 IC15 IC20 IC25 IC40 IC50		0.734 1.47 2.2 2.94 3.67 5.87 7.75	0.515 1.03 1.54 2.06 2.57 4.12 5.15	1.37 2.74 4.11 5.48 6.53 8.42 9.72	136.3 68.14 45.43 34.03 27.23 17.03 12.9	4 2 7 5 3	inear ini	erpolation (K	GPIN)	
02-3705-1402	Survival		EC5 EC10 EC15 EC20 EC25 EC40 EC50		2.89 4 4.99 5.94 6.9 10.1 12.7	0.431 0.827 1.28 1.8 2.4 4.82 7.09	5.64 7.13 8.39 9.59 10.8 15 18.9	34.6 24.9 20.0 16.8 14.4 9.92 7.90	3 L 9 5 3	inear Re	gression (MI	LE)	
Reproduction	Summary												
C-% 0 0 6.25 12.5 25 50 100	Control Type Hardness Blank Lab Water Contr		Mean 10.3 26.3 15.1 7 5.1 3.6 0.9		95% LCL 9.47 24.6 11.9 6.27 4.69 2.83 0.279	95% UCL 11.1 28 18.3 7.73 5.51 4.37 1.52	Min 7 16 4 5 4 0 0	Max 14 32 29 10 7 5 4	0 1 2 0 0	.45 .73 .615 .348 .653	2.21 4.57 8.65 1.94 1.1 2.07 1.66	21.5% 17.4% 57.3% 27.8% 21.6% 57.4% 185.0%	%Effect 0.0% -155.0% -46.6% 32.0% 50.5% 65.0% 91.3%
ļ	manı	-						· .					
	Control Type	Count	Mean		95% LCL		Min	Max		td Err	Std Dev	CV%	%Effect
1	Hardness Blank Lab Water Contr		1 1 0.7 0.7 0.1 0.1	,	1 1 0.52 0.52 0 0 0	1 1 0.88 0.88 0.218 0.218	1 1 0 0 0 0	1 1 1 1 1 1 0	0	.153 .153 .1 .1	0 0 0.483 0.483 0.316 0.316	0.0% 0.0% 69.0% 69.0% 316.0%	0.0% 0.0% 30.0% 30.0% 90.0% 90.0% 100.0%

02 Apr-13 10:35 (p 2 of 2)

Test Code: 51250 | 16-0812-6996

Ceriodap	hnia Survival and Re	production	on Test							Pacif	ic EcoRisi
Reprodu	ction Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	10	7	10	12	7	9	12	11	14	11
0	Lab Water Contr	16	24	23	27	27	28	26	31	29	32
6.25		29	16	13	10	7	5	4	22	23	22
12.5		5	10	8	5	6	7	5	8	10	6
25		5	6	6	7	4	4	6	4	5	4
50		0	5	5	3	3	0	5	5	5	5
100		0	0	0	4	0	0	0	4	1	0
Survival I	Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1	1	1	1	1	1	1	1	1	1
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	0	0	1	0	1	1	1
12.5		1	1	1	1	0	0	0	1	1	1
25		0	0	0	0	0	0	0	0	0	1
50		0	0	0	0	0	0	0	0	1	0
100		0	0	0	0	0	0	0	0	0	0
Survival I	Binomials										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0	Lab Water Contr	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
3.25		1/1	1/1	1/1	0/1	0/1	1/1	0/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	0/1	0/1	0/1	1/1	1/1	1/1
25		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	1/1
50		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	1/1	0/1
100		0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1	0/1

CETIS Analytical Report

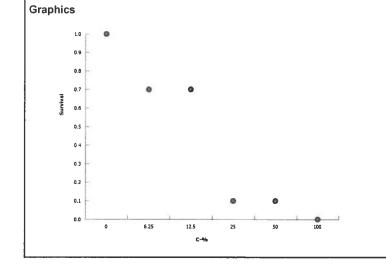
Report Date:

02 Apr-13 09:34 (p 1 of 1)

Test Code:

51250 | 16-0812-6996

Ceriodaphnia	Survival and Re	produ	iction Test							Paci	fic EcoRisi
Analysis ID: Analyzed:	11-0927-4319 02 Apr-13 9:31		Endpoint: Sun Analysis: STP		ngency Tabl	es		S Version: ial Results:	CETIS\ Yes	1.8.5	
Data Transfor	m	Zeta	Alt Hyp	Trials	Seed			NOEL	LOEL	TOEL	TU
Untransformed	I		C > T	NA	NA			12.5	25	17.68	8
Fisher Exact/[Bonferroni-Holm	Test				-	· -				
Control	vs C-%		Test Stat	P-Value	P-Type	Decision	(α:5%)				
Lab Water Cor	ntrol 6.25		0.105	0.2105	Exact	Non-Signi	ificant Effect				
	12.5		0.105	0.2105	Exact	Non-Signi	ificant Effect				
	25		0.0000595	0.0002	Exact	Significan	t Effect				
	50		0.0000595	0.0002	Exact	Significan	t Effect				
	100		5.41E-06	<0.0001	Exact	Significan					
Data Summar	y										
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect				
0	Lab Water Cont	10	0	10	1	0	0.0%				
6.25		7	3	10	0.7	0.3	30.0%				
12.5		7	3	10	0.7	0.3	30.0%				
25		1	9	10	0.1	0.9	90.0%				
50		1	9	10	0.1	0.9	90.0%				
100		0	10	10	0	1	100.0%				



Analyst QA:

02 Apr-13 09:34 (p 1 of 2)

Test Code: 51250 | 16-0812-6996

											- 1	
Cerioda	aphnia Sur	vival and Re	eproductio	n Test							Pa	cific EcoRisk
Analysi	s ID: 02	-3705-1402	End	point: Su	rvival			CETI	S Version:	CETISv1	.8.5	
Analyze	ed: 02	Apr-13 9:31	Ana	lysis: Lin	ear Regress	ion (MLE)		Offic	ial Results	Yes		
Linear	Regressio	n Options				···					•	
Model I	unction			Threshol	d Option	Threshold	Optimized	Pooled	Het Corr	Weighted	ı	
Log-Noi	mal [NED=	A+B*log(X)]		Control T	hreshold	0.0000001	Yes	Yes	No	Yes		
Regres	sion Sumn	nary		-			-					
Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	F Stat	Critical	P-Value	Decision	(a:5%)	
6	-20.4	58.9	46.2	1.1	0.39	0.852				Lack of Fi	<u> </u>	sted
Point E	stimates				**							
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL						
EC5	2.89	0.431	5.64	34.63	17.72	232.1						
EC10	4	0.827	7.13	24.99	14.02	120.9						
EC15	4.99	1.28	8.39	20.05	11.92	78.27						
EC20	5.94	1.8	9.59	16.83	10.43	55.62						
EC25	6.9	2.4	10.8	14.48	9.266	41.67						
EC40	10.1	4.82	15	9.92	6.673	20.73						
EC50	12.7	7.09	18.9	7.901	5.286	14.11						
Regres	sion Paran	neters										
Parame	ter	Estimate	Std Error	95% LCL	95% UCL	t Stat	P-Value	Decision(α:5%)			
Thresho	ld	1.14E-07	0.000107	-0.00021	0.00021	0.00107	0.9992	Non-Signi	ficant Paran	neter		
Slope		2.56	0.67	1.25	3.88	3.82	0.0315	_	t Parameter			
Intercep	t	-2.83	0.842	-4.48	-1.17	-3.36	0.0439	Significant	Parameter			
ANOVA	Table											
Source		Sum Squa	ares Mea	n Square	DF	F Stat	P-Value	Decision(α:5%)			
Model		32.41068	32.4	1068	1	30.8	0.0115	Significant	t			
Residua	d .	3.154932	1.05	1644	3							
Residua	al Analysis					· ·						
Attribut	e	Method			Test Stat	Critical	P-Value	Decision(α:5%)			
Goodne	ss-of-Fit		hi-Sq GOF		3.15	7.81	0.3683		ficant Hetero			
			Ratio GOF		3.41	7.81	0.3320	•	ficant Hetero	ogenity		
Distribut	ion	Shapiro-W	ilk W Norm	ality	0.964	0.513	0.8466	Normal Di	stribution			
Surviva	I Summar	/				Calcu	lated Variat	e(A/B)				
C-%	Cont	rol Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	Α	В
0	Lab V	Vater Contro		1	1	1	0	0	0.0%	0.0%	10	10
6.25			10	0.7	0	1	0.153	0.483	69.0%	30.0%	7	10
12.5			10	0.7	0	1	0.153	0.483	69.0%	30.0%	7	/ 10
25			10	0.1	0	1	0.1	0.316	316.0%	90.0%	1	10
50			10	0.1	0	1	0.1	0.316	316.0%	90.0%	1	10
100			10	0	0	0	0	0		100.0%	0	10

Report Date: **Test Code:**

02 Apr-13 09:34 (p 2 of 2)

51250 | 16-0812-6996

Ceriodaphnia Survival and Reproduction Test Pacific EcoRisk Analysis ID: 02-3705-1402 Endpoint: Survival **CETIS Version:** CETISv1.8.5 Analyzed: 02 Apr-13 9:31 Analysis: Linear Regression (MLE) Official Results: Yes Graphics Log-Normal [NED=A+B*log(X)] 1.01 1.0 0.81 0.71 0.2 -0.4 -0.6 0.10 -0.8 1.4 1.0 1.0 9.0 0.8 0.6 0.4 0.2 0.0 0.0 -0.2

> -0.4 -0.6



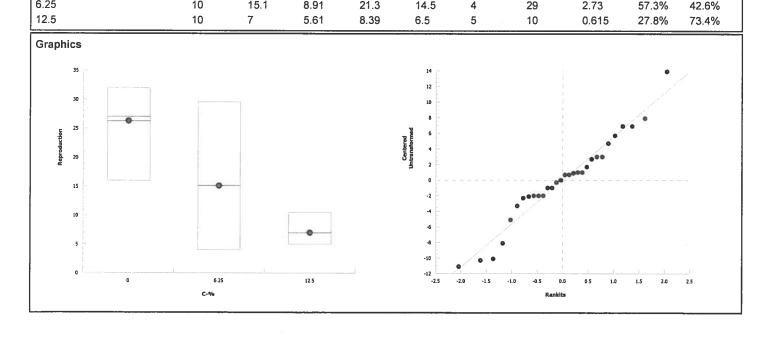
-0.4

-0.8

Report Date: Test Code: 02 Apr-13 10:35 (p 1 of 1)

port Date.	02 Apr-13 10.03 (p 1 01 1)
st Code:	51250 16-0812-6996

Analysis ID: 11-0244-2636	acific EcoRis
NA	
Steel Many-One Rank Sum Test	- TU
Control vs C-% Test Stat Critical Ties DF P-Value P-Type Decision(α:5%) Lab Water Control 6.25* 66.5 79 3 18 0.0035 Asymp Significant Effect ANOVA Table Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%) Between 1878.467 939.2333 2 28.3 <0.0001	>16
Lab Water Control 6.25* 66.5 79 3 18 0.0035 Asymp Significant Effect ANOVA Table Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%) Between 1878.467 939.2333 2 28.3 <0.0001	
12.5* 55 79 0 18 0.0002 Asymp Significant Effect	
ANOVA Table Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%) Between 1878.467 939.2333 2 28.3 <0.0001	
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%) Between 1878.467 939.2333 2 28.3 <0.0001	
Between 1878.467 939.2333 2 28.3 <0.0001	
Error 895 33.14815 27 Total 2773.467 29 Distributional Tests Attribute Test Test Stat Critical P-Value Decision(α:1%) Variances Bartlett Equality of Variance 15.6 9.21 0.0004 Unequal Variances Distribution Shapiro-Wilk W Normality 0.963 0.903 0.3705 Normal Distribution Reproduction Summary	
Total 2773.467 29 Distributional Tests Attribute Test Test Stat Critical P-Value Decision(α:1%) Variances Bartlett Equality of Variance 15.6 9.21 0.0004 Unequal Variances Distribution Shapiro-Wilk W Normality 0.963 0.903 0.3705 Normal Distribution Reproduction Summary	
Distributional Tests Attribute Test Test Stat Critical P-Value Decision(α:1%) Variances Bartlett Equality of Variance 15.6 9.21 0.0004 Unequal Variances Distribution Shapiro-Wilk W Normality 0.963 0.903 0.3705 Normal Distribution Reproduction Summary	
AttributeTestTest StatCriticalP-ValueDecision(α:1%)VariancesBartlett Equality of Variance15.69.210.0004Unequal VariancesDistributionShapiro-Wilk W Normality0.9630.9030.3705Normal DistributionReproduction Summary	
Variances Bartlett Equality of Variance 15.6 9.21 0.0004 Unequal Variances Distribution Shapiro-Wilk W Normality 0.963 0.903 0.3705 Normal Distribution Reproduction Summary	-
Distribution Shapiro-Wilk W Normality 0.963 0.903 0.3705 Normal Distribution Reproduction Summary	
Reproduction Summary	
C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std Err CV%	
The state of the s	%Effect
0 Lab Water Contr 10 26.3 23 29.6 27 16 32 1.45 17.4	6 0.0%
6.25 10 15.1 8.91 21.3 14.5 4 29 2.73 57.3	6 42.6%



CETIS Analytical Report

Analysis:

Analyzed:

Report Date: Test Code:

Official Results: Yes

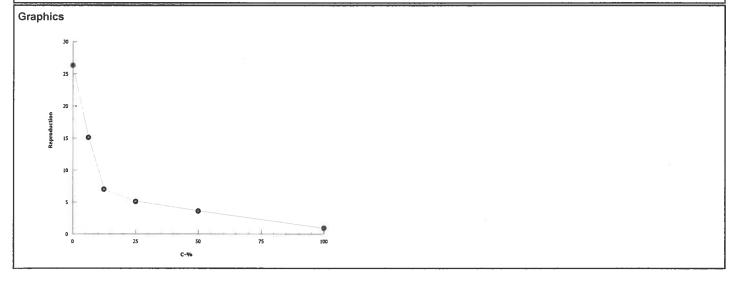
02 Apr-13 09:34 (p 1 of 1)

51250 | 16-0812-6996

Pacific EcoRisk Ceriodaphnia Survival and Reproduction Test 21-2010-7883 Endpoint: Reproduction **CETIS Version:** CETISv1.8.5 Analysis ID: 02 Apr-13 9:33 Linear Interpolation (ICPIN)

Linear	Interpola	tion Options						
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method	
Linear		Linear	1965	381	200	Yes	Two-Point Interpolation	
Point E	stimates	j						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	0.734	0.515	1.37	136.3	72.96	194.2		
IC10	1.47	1.03	2.74	68.14	36.48	97.1		
IC15	2.2	1.54	4.11	45.42	24.32	64.73		
IC20	2.94	2.06	5.48	34.07	18.24	48.55		
IC25	3.67	2.57	6.53	27.25	15.33	38.84		
IC40	5.87	4.12	8.42	17.03	11.88	24.27		
IC50	7.75	5.15	9.72	12.9	10.29	19.42		

Reproducti	on Summary		Calculated Variate									
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect			
	Lab Water Contro	10	26.3	16	32	1.45	4.57	17.4%	0.0%			
3.25		10	15.1	4	29	2.73	8.65	57.3%	42.6%			
12.5		10	7	5	10	0.615	1.94	27.8%	73.4%			
:5		10	5.1	4	7	0.348	1.1	21.6%	80.6%			
50		10	3.6	0	5	0.653	2.07	57.4%	86.3%			
100		10	0.9	0	4	0.526	1.66	185.0%	96.6%			



(Client:	<u> </u>		Lehigh Po	rmanent	e		M	laterial:	_	:	Pond 13	3		_	Te	st Date:	3/26/13
Pro	ject #:	:20	780		Test ID:	512	50	·	Random	ization:		5.7.7	۷		-	Control	Water:	Modified EPAMH
	Day	<u> </u>		D.O.		Cond.	Temp (°C)						eproduct			T		SIGN-OFF
	0	New	Old	New	Old	(μ5/cm)		A	В	С	D	Е	F	G	Н	1	J	Date: 3/26/13 New WQ: Test Init
	Ľ	7.95		8.7		343	25.6	0	0	0	0	0	0	0	0	0	0	Sol'n Prep: Time 15.35 Date: 5.27.13 New WQ: Counts
	I	7.81	8-05	8.6	8.0	336	25.9	0	0	0	0	0	0	0	0	0	0	Sol'n Prep: Old WQ: JLA Time: 1530
	2	1.89	798	1.5	\$65.7	353	عرد ٩	0°	છ	0	ð	0	0	٥	0	0	8	Date: 3:27 13 New WQ: Sol'n Prep: Old WQ Time: 600
rol	3	7.92	1.99	8.6	1.9	353	45.7	6	0	0	6	0	5	4	Ð	0	D	Date: 5.21.6 New WQ: NO Counts Sol'n Prep. Old WQ: Time
Lab Water Control	4	7.88	7.70	8.5	6.9	347	25-7	5	5	5	6	6	н	6	4	ų	4	Date: 3, 30, 43 New WQ: FOV Counts Sol'n Prep: Old WQ: Time! (30
ab Wat	5	7.93	8.04	8.7	8.5	346	25.7	11	9	8	8	12	0	10	11	10	14	Dut 3.3/.13 New WQ: TOVB Counts Sol'n Prep: Old WQ: Time 708
1	6	8.03	7.97	8.3	7.8	348	75.8	0	10	10	13	9	12	12	16	13	12	Date: 9/1/3New WD Counts Sol'n Prep: 90 Old WQ: 1/3 Time 1/45
	7																	Date: New WQ; Counts: Sol'n Prep: Old WQ: Time
	8				7													Date: Old WQ: Counts Time
							Total=	16	24	23	27	27	28	24	31	29	32	Mean Neonates/Female = Z6.3
	Day	New P	H Old	D. New	.O.	Cond. (µS/cm)	3888888	Α	В	С	Surviva D	I / Repro	duction F	G	н	1	j	Sample ID
	0		OIU	8.8	Olu	422		0	0	0	0		0	0	0	0	0	31335
	1	7.87	7.98	8.4	7.9	410		0	0	0	0	0	0	0	0	0	$\overline{\bigcirc}$	31335
	2	1)								\circ	
	-	7-86	8.02	7.8	5.9	408		Q	6	0	0		0	0	0	0	0_	31379
	3	7.91	8.03	83	8.3	425		- 0	6	0	0	5	5	3	0	0	0	31379
6.25%	4	7.88	7.98	8.4	6.6	415		4	4	5	C	6	٥	4	Ç,	4	5	31433
6.	5	7.91	8.02	8.7	8.4	417		12	12	8	4	×/2	0	0	10,	10	7	31433
				_	_	1		.1	~		x/.	-	0	X/0	X6	-	10	034122
	6	7.99	8.01	8.3	7.9	417		13	\cup	0	x/0			10	200		10	31433
	6 7	799	8.01	8.3	7.9	417		13	0	0	70	`		1/0	340		10	31933
		799	8.01	8.3	7.9	417		13	0	0	70			10	<i>34</i> 0		10	3193 >

(Client:			Lehigh Pe	ermanent	e		N	laterial:			Pond 1	3			Те	st Date:	3/26/13
Pro	ect#:	201	780		Test ID:	512	50	-								Contro	Water:	Modified EPAMH
	Day	pН	011	D.O.		Cond. (µS/cm)	Temp					rvival / R	 					SIGN-OFF
		New	Old	New	Old	(µ3/cm)	(°C)	A	В	С	D	Е	F	G	Н	I	J	
	0	7.87		8.8		499		0	0	0	0	0	0	0	0	0	0	
	1	7.94	7.92	8.4 8.8	7.7	499 481 626		0	0	0	0	0	0	0	0	0	0	
	2	1.86	8.04	8-0	6.3	411		0	8	0	Ø	٥	0	٥	0		0	
	3	7.97	8.08	8.2	8.2	501		۵	6	6	0	6	٥	5	٥	0	0	
12.5%	4	7.90	7.88	8.5	6.8	491		5	5	4	5	0	5	0	3	4	6	
12	5	7.95	8.10	8.6	8.4	490		6	5	4	0	1/6	×/2	%	a	6	٥	
	6	798	804	8-6	7.8	489		0	0	0	0	_	-	-	0	0	0	
	7											-	-	-				
	8											`	_	-				
							Total=	5	10	8	J.	٧/6	×/7	7/5	ક	10	4	Mean Neonates/Female = 7.0
	Day	pl		D.		Cond.	nanania				Surviva	I / Repro	duction					
		New	Old	New	Old	(µS/cm)		Α	В	С	D	Е	F	G	Н	1	J	
	0	7.90		8.8		620		0	0	0	0	0	0	0	0	0	o	
	1	7.97	7.99	8.4	7.9	615		0	0	0	0	0	0	0	0	0	0	
	2	1.95	8.06	1.5	66	605		Ó	6	0	٥	0	0	0	O	0	ð	
	3	7.99	8-11	8.2	8.3	619		0	Đ	٥	5	4	4	o	٥	٥	Ö	
25%	4	7.91	7.96	8.5	8.6	600		5	C	6	0	x/0	0	6	4	5	4	
61	5	7.98	8.13	8.8	8.4	609		7/0	0	×/°	×/2	,	0	1/0	4/0	0	0	
	6	796	8.08	8-6	7.5	608		`	×/6	-	**	-	×/0	-	_	×/6	0	
	7							-	-	-	_	1		-	•			
	8		li e		_	=v ==15=		-	7	-	- 1	<u>"</u>	>	-	-			
							Total=	*/5	۲/ ₆	×/6	×/7	7/4	*/4	*/6	4/4	¥5	4	Mean Neonates/Female = 5

(Client:]	Lehigh P	ermanent	e		_ N	laterial:			Pond 1	3	_		Те	st Date:	3/26/13
Pro	ject #:	20	780		Test ID:	512	50									Control	Water:	Modified EPAMH
	Day	pН		D.O.		Cond. (µS/cm)	Temp (°C)						Reproduc					SIGN-OFF
		New	Old	New	Old	(µ3/ciii)	(C)	A	В	С	D	Е	F	G	Н	1	J	888888888888888888888888888888888888888
	0	7.96		9.1		864		0	0	0	0	O	0	0	0	0	O	
	1	7.98	8.11	8.5	8.1	844		70	0	0	0	0	0	0	0	0	0	
	2	7.96	8.09	1.9	<i>5</i> .3	838		-	Ø	0	0	0	0	0	0	O	٥	
	3	8.08	8.21	8.3	8.3	847		-	D	0	3	3	0	0	٥	6	٥	
%0%	4	7.97	8.08	8.8	6.6	811		~	5	*/6	×/0	*/0	2/0	5	5	5	×/5	
56	5	7.99	8.18	8.9	8.4	831		_	X/0	_	-	~		×/0		0	,	
			8.15	_	7.9	834		_		_	_		_	70		-	ſ	
	7		ر ایل		1. 1	27			_				_	_	_			
	8										-		_				_	
							Total=	X/_	x/5	x/e	×/3	×/3	×/0	*/5	*/5	5	~/S	21
	Day	p	:::::::::::::::::::::::::::::::::::::	D.	O.	Cond.	Total	170	/3	7 5	1/2	I / Repro		/ 5	/5	2	1/5	Mean Neonates/Female = 3.6
		New	Old	New	Old	(µS/cm)		Α	В	С	D	E	F	G	Н	Ī	J	
	0	7,98		9.4		1276		0	0	0	0	0	0	0	0	ð	0	
	1	8.02	8.02	8.9	0.8	1250		0	0	0	0	0	Ó	0	0	0	0	
	2	1.99	8.05	8.0	5.6	1227		6	•	a	0	0	×/0	0	0	0	0	
	3	8.16		8.4		1260		0	0	0	4	0		0	ි ව	0	<u></u>	
%001	4	8.01	8.09		6.7	1228		4/0	×/0	0	71/6	0	_	7/0	4		*/0	
001	5			9.6		1220		_	_	0	76	*/0		-	1/6			
			8.09	9.0				_			_		1		70	_	_	
	7	0.00	<i>D.</i> 1	1.0	70-1	1230					,	-		,	_			
	8				_= 0							-		_	_	-		
	0						Tatal	40	*/0	^	×1.4	×I_	<u>-</u> /.	- XI-	8/	VI.	×/	26
<u></u>							Total=	10	70	0	×/4	70	×/0	40	74	*/1	10	Mean Neonates/Female = 0.9

CETIS Analytical Report

C-%

Report Date: Test Code: 02 Apr-13 09:51 (p 1 of 1)

51250 | 16-0812-6996

Ceriodaphn	ia Survival and Re	produ	uction Test							Pacific EcoRisi
Analysis ID: Analyzed:	01-8265-2002 02 Apr-13 9:50		•	vival gle 2x2 Cor	ntingency Ta	ble		Version: Il Results:	CETISv1.8.5 Yes	
Data Transfe	orm	Zeta	Alt Hyp	Trials	Seed			Test Resul	t	
Untransforme	ed		C > T	NA	NA			Passes sur	vival	
Fisher Exac	t Test						· · · · · · · · · · · · · · · · · · ·			
Control	vs Control		Test Stat	P-Value	P-Type	Decision	(α:5%)			
Lab Water C	ontrol Hardness	Blank	1	1.0000	Exact	Non-Sign	ificant Effect			
Data Summa	ary									
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect			
0	Hardness Blank	10	0	10	1	0	0.0%			
0	Lab Water Cont	10	0	10	1	0	0.0%			
Graphics										
1.0	•		•							
0.9										
0.8										

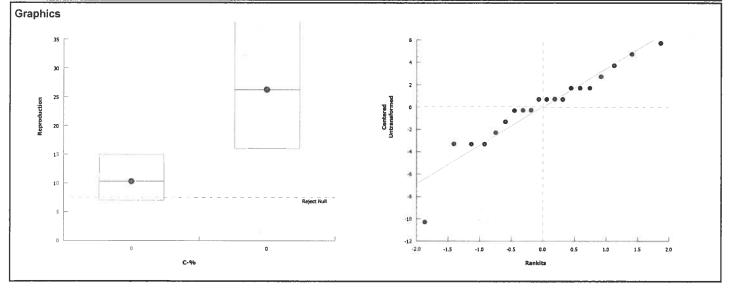
Analyst:____

02 Apr-13 09:51 (p 1 of 1) 51250 | 16-0812-6996

Test Code:

Ceriodaphnia Sur	vival and Reprodu	ction Test						Pacific EcoRisk
,,	8440-1556 Apr-13 9:50	•	oroduction ametric-Two	Sample			S Version: CETISv1.8.5 ial Results: Yes	
Data Transform	Zeta	Alt Hyp	Trials	Seed		PMSD	Test Result	
Untransformed	NA	C > T	NA	NA		10.6%	Fails reproduction	
Equal Variance t T	wo-Sample Test							
Control vs	Control	Test Stat	Critical	MSD DF	P-Value	P-Type	Decision(α:5%)	
Lab Water Control	Hardness Blank	9.96	1.73	2.79 18	<0.0001	CDF	Significant Effect	
ANOVA Table								
Source	Sum Squares	Mean Squ	ıare	DF	F Stat	P-Value	Decision(a:5%)	
Between	1280	1280		1	99.2	<0.0001	Significant Effect	
Error	232.2	12.9		18				
Total	1512.2			19	_			
Distributional Test	S	· · ·						
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)	
Variances	Variance Ratio F		4.27	6.54	0.0418	Equal Var	iances	
Distribution Shapiro-Wilk W Normality			0.915	0.866	0.0808	Normal Di	stribution	
Reproduction Sum	nmary	,,						

F	Reproduction	Summary										
	C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
)	Lab Water Contr	10	26.3	23	29.6	15	16	32	1.45	17.4%	0.0%
	ס	Hardness Blank	10	10.3	8.72	11.9	15	7	14	0.7	21.5%	60.8%



(Client: Lehigh Permanente							M	laterial:		Hard	ness Co	ontrol			Те	st Date:	3/26/13
Pro	ject #:	20	780		Test ID:	512	48	F	Random	ization:		10.2	.1			Control	Water:	Modified EPAMH
	Day	pН		D.O.		Cond.	Temp			,	Su	rvival / R	Reproduc	tion				SIGN-OFF
		New	Old	New	Olq	(µS/cm)	(°C)	Α	В	С	D	Е	F	G	Н	1	J	
	0	8.63		8.9		2406	25.4	0	0	0	0	0	0	0	0	o	0	Date: 3/21/13 New WQ: Test Init: Sol'n Prep: Time 1/55
	ı	8.67	8.55	8-8	7.6	2415	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3/n 13 New WQ: FORF Counts 148 Sol'n Prep Old WQ: TCA Time: 550
	2	8.58	9.45	8.2	7.9	2447	25.9	0	9	0	0	0	0	0	O	ø	0	Date: 3.28. New WQ: D5 Counts: Sol'n Prep: Old WQ: M Time: NO.
trol	3	8.63	8.69	8.2	8.4	2449	ಖನ	O	0	0	4	a	0	0	9	6	2	Date: 3.27.13 New WQ: PS Counts Sol'n Prep: Old WQ: #3 Time 730
s Control	4	3.61	8.63	8.2	7.8	2414	25.7	3	2	0	0	0	0	3	2	١	O	Date: 3.3 a New WQ: DH Counts Sol'n Prep: Old WQ: Time 500
Hardness	5	8.59	8.65	9-2	7.8	2484	25.7	2	2	4	a	0	4	0	3	Ç	Ć	Date: 3.31. New WQ. TOV7 Counts Sol'n Prep: Old WQ: RA Time;
H	6	8.62	18.49	9-3	7.7	2476	75.8	5	3	6	G	5	5	9	6	7	9	Sol'n Prep: Old WQ: Counts Time: 1500
	7								74								-	Date: New WQ: Counts: Sol'n Prep: Old WO: Time:
	8																	Date: New WQ: Counts Sol'n Prep Old WO: Time
							Total=	10	7	16	12	フ	9	17	11	14	11	Mean Neonates/Female = 10.3

	Client: Lehigh Permanente					Material:	Meter IDs	Test Date:	3/26/13	3			
Pro	ject #:	20	780	_	Test ID:	512	50			Control Water:	Mo	dified EPAN	1H
	Day	New P	H Old	D New	.O.	Cond. (µS/cm)	Temp (°C)					SIGN-OFF	
	0	PH16		R004		EOT	30A				Date: 3/26/13	New WQ:	Old WQ:
	I	0115	PHI9	P-007	R007	FLON	30A				3/27/13	New WQ:	Old WQ:
	2	PHIL	PHIS	ROOT	RIDOL	ELOH	30 A				Date: 3-28-13	New WQ:	Old WQ:
	3	PHIS	pH19	RDO7	ROOH	EL07	30A				3-29-13	New WO:	Old WQ
Meter ID's	4	PH19	pH 15	12004	2706	ECOV	30A				Date: 3.30.13	New WQ:	Old WQ
Met	5	PHIG	PHP	PDOY	ROOY	£006	20.A				Date: 3/31/13	New WQ:	Old Wo
	6	Ph5	04191	2006	ROOM	Ecos	<i>3</i> 6A				4/113	New WQ:	Old WO
	7		•								Date:	New WQ:	Old WQ
	8										Date:	New WQ:	Old WQ:

Appendix I

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 14 Site Water to Ceriodaphnia dubia



02 Apr-13 09:51 (p 1 of 2)

Test Code:

	2 Odivival dila 110	productio	niest							Pacif	ic EcoRisk	
Batch ID: Start Date: Ending Date: Duration:	02-8626-4030 26 Mar-13 16:00 01 Apr-13 16:30 6d 1h	Pro Spe	t Type: tocol: cies: irce:	Reproduction-S EPA-821-R-02- Ceriodaphnia d In-House Cultur	013 (2002) ubia		1	Analyst: Diluent: Brine: Age:	Alison Briden Laboratory Wat Not Applicable 1	er		
Receive Date	14-7229-2803 : 25 Mar-13 12:55 : 25 Mar-13 15:30 27h (13.7 °C)) Sou	le: erial: irce: tion:	Pond 14 Effluent Lehigh Perman Pond 14	ente			Client: Project:	Lehigh Perman 20780	ente		
Comparison	Summary		•			•	•					
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU	Meth	nod			
02-1039-6739 19-2537-8058 02-4339-6444 13-4746-0159	Reproduction Survival		<0 25 0 100	0 50 >0 >100	35.36 NA	11.3% 22.4% NA NA	4	Stee Fishe	al Variance t Two I Many-One Ranl er Exact Test er Exact/Bonferro	Sum Test		
Point Estima	te Summary			·								
Analysis ID	Endpoint		Level	%	95% LCL	95% UCL	TU	Meth	nod			
05-4900-2486	Reproduction		IC5 IC10 IC15 IC20 IC25 IC40 IC50	21.1 27.3 31.4 35.5 39.6 67.1 >100	14.5 16.7 18.9 21 23.1 43.8 N/A	29.7 34.5 41.2 47.6 58.4 N/A N/A	4.738 3.669 3.188 2.818 2.525 1.489 <1) } }	Method Linear Interpolation (ICPIN)			
Reproduction	n Summary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std I	Err Std Dev	CV%	%Effect	
0 0 6.25 12.5 25 50 100	Hardness Blank Lab Water Contr		10.3 27.4 31.4 32.1 28.1 18.9 16.8	9.47 25.5 29.2 30.6 24.8 16.4 15.5	11.1 29.3 33.6 33.6 31.4 21.4 18.1	7 17 17 26 5 13	14 35 38 39 35 35 23	0.7 1.64 1.89 1.27 2.81 2.13	2.21 5.19 5.97 4.01 8.88 6.72 3.58	21.5% 18.9% 19.0% 12.5% 31.6% 35.6% 21.3%	0.0% -166.0% -205.0% -212.0% -173.0% -83.5% -63.1%	
Survival Sum	ımary											
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std I	Err Std Dev	CV%	%Effect	
0 0 6.25 12.5 25 50	Hardness Blank Lab Water Contr		1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	1 1 1 1 1	0 0 0 0 0	0 0 0 0	0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	0.0% 0.0% 0.0% 0.0% 0.0%	

Report Date: Test Code:

02 Apr-13 09:51 (p 2 of 2)

							Tes	t Code:		51251 0	8-7754-473
Ceriodapl	hnia Survival and Re	production	on Test							Pacif	ic EcoRisk
Reproduc	tion Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	10	7	10	12	7	9	12	11	14	11
0	Lab Water Contr	17	27	28	35	31	22	28	27	26	33
6.25		36	36	38	32	31	28	31	35	30	17
12.5		37	35	39	30	30	26	29	30	31	34
25		33	35	31	33	5	22	32	28	30	32
50		15	17	13	23	24	35	17	14	16	15
100		16	22	16	17	18	12	16	23	12	16
Survival D	Detail										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1	1	1	1	1	1	1	1	1	1
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
6.25		1	1	1	1	1	1	1	1	1	1
12.5		1	1	1	1	1	1	1	1	1	1
25		1	1	1	1	1	1	1	1	1	1
50		1	1	1	1	1	1	1	1	1	1
100		1	1	0	1	1	1	0	1	1	1
Survival E	Binomials										
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Hardness Blank	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
0	Lab Water Contr	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	0/1	1/1	1/1	1/1	0/1	1/1	1/1	1/1

Report Date: Test Code:

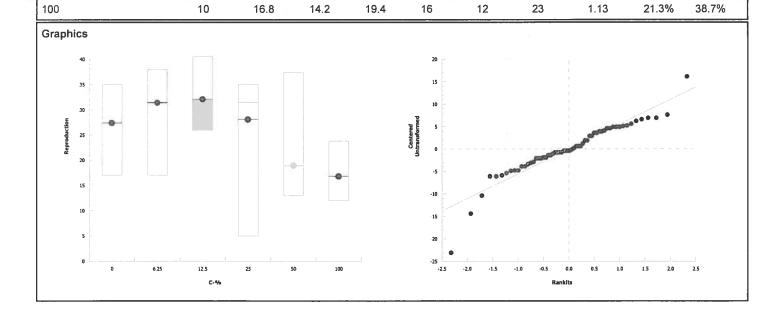
02 Apr-13 09:50 (p 1 of 1)

Cariadanhai	a Survival and Re		etien Teet							· ·	Sa FaaDia
•		eproau							<u> </u>		ic EcoRis
Analysis ID:	13-4746-0159		Endpoint:					S Version:	CETISV	1.8.5	
Analyzed:	02 Apr-13 9:49		Analysis:	STP 2x2 (Contingency Ta	bles	Offic	ial Results:	Yes		
Data Transfo	orm	Zeta	Alt Hy	p Trial	s Seed			NOEL	LOEL	TOEL	TU
Untransforme	ed		C > T	NA	NA			100	>100	NA	1
Fisher Exact	/Bonferroni-Holm	Test									
Control	vs C-%		Test St	tat P-Va	lue P-Type	Decision	n(a:5%)				
Lab Water Co	ontrol 6.25		1	1.000	00 Exact	Non-Sigr	nificant Effect				
	12.5		1	1.000	00 Exact	Non-Sigr	nificant Effect				
	25		1	1.000	00 Exact	Non-Sigr	nificant Effect				
	50		1	1.000	00 Exact	Non-Sigr	nificant Effect				
	100		0.237	1.000	00 Exact	Non-Sigr	nificant Effect				
Data Summa	iry										
C-%	Control Type	NR	R	NR +	R Prop NF	R Prop R	%Effect				
D	Lab Water Cont	10	0	10	1	0	0.0%				
5.25		10	0	10	1	0	0.0%				
12.5		10	0	10	1	0	0.0%				
25		10	0	10	1	0	0.0%				
50		10	0	10	1	0	0.0%				
10 0		8	2	10	0.8	0.2	20.0%				
Graphics											
1.0	0 0	0									
0.9											
8.0				.0							
0.7											
o 6											
0.5											
0.4											
0.3											
0.2											
0.1											
											

02 Apr-13 09:50 (p 1 of 2)

Test Code: 51251 | 08-7754-4734

Ceriodaphnia	Survi	ival and Re	produc	ction Test								•	Paci	fic EcoRisk
Analysis ID: Analyzed:		537-8058 \pr-13 9:49		Endpoint: Analysis:	•	roduction parametric-	Control	vs T	reatments		S Version		.8.5	
Data Transfor	m		Zeta	Alt H	lyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed	1		NA	C > T	•	NA	NA			22.4%	25	50	35.36	4
Steel Many-O	ne Ra	nk Sum Te	st									,		
Control	vs	C-%		Test	Stat	Critical	Ties	DF	P-Value	P-Type	Decision	ι(α:5%)		
Lab Water Cor	ntrol	6.25		131		75	4	18	0.9996	Asymp	Non-Sigr	nificant Effect		
		12.5		132		75	3	18	0.9996	Asymp	Non-Sigr	nificant Effect		
		25		120		75	5	18	0.9889	Asymp	Non-Sigr	nificant Effect		
ı		50*		69.5		75	2	18	0.0156	Asymp	Significa	nt Effect		
		100*		60		75	2	18	0.0016	Asymp	Significa	nt Effect		
ANOVA Table				2										
Source				Mean	Squ	are	DF		F Stat	P-Value	Decision	η(α:5%)		
Between		2075.083		415.0	167		5		11.6	<0.0001	Significa	nt Effect		
Error		1939.1		35.90	926		54							
Total		4014.183					59							
Distributional	Tests	5												
Attribute		Test				Test Stat	Critic	al	P-Value	Decision	(α:1%)			
Variances		Bartlett Ed	quality o	of Variance		9.58	15.1		0.0880	Equal Var	iances		,	
Distribution		Shapiro-W	/ilk W N	Normality		0.917	0.946		0.0006	Non-norm	al Distribut	ion		
Reproduction	Sum	mary												
C-%	Cont	rol Type	Count	t Mean	1	95% LCL	95% L	JCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab V	Vater Contr	10	27.4		23.7	31.1		27.5	17	35	1.64	18.9%	0.0%
6.25			10	31.4		27.1	35.7		31.5	17	38	1.89	19.0%	-14.6%
12.5			10	32.1		29.2	35		30.5	26	39	1.27	12.5%	-17.2%
25			10	28.1		21.8	34.4		31.5	5	35	2.81	31.6%	-2.55%
50			10	18.9		14.1	23.7		16.5	13	35	2.13	35.6%	31.0%
100			10	16.8		14.2	19.4		16	12	23 1.13 2			38.7%



CETIS Analytical Report

Report Date: **Test Code:**

02 Apr-13 09:50 (p 1 of 1)

51251 | 08-7754-4734

Ceriodaphnia Survival and Reproduction Test

23.1

43.8

N/A

58.4

N/A

N/A

Pacific EcoRisk

Analysis ID: 05-4900-2486 Analyzed: 02 Apr-13 9:50

IC25

IC40

IC50

39.6

67.1

>100

Endpoint: Reproduction Analysis:

2.525

1.489

<1

1.714

NA

NA

Linear Interpolation (ICPIN)

CETIS Version:

CETISv1.8.5

Officia	Results:	Yes

Linear	Linear Interpolation Options														
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method								
Linear		Linear	1703	310	200	Yes	Two-Point Interpolation								
Point E	stimates	<u> </u>													
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL									
IC5	21.1	14.5	29.7	4.738	3.363	6.915	,								
IC10	27.3	16.7	34.5	3.669	2.901	5.975									
IC15	31.4	18.9	41.2	3.188	2.428	5.304									
IC20	35.5	21	47.6	2.818	2.102	4.768									

4.33

2.283

NA

Reprodu	uction Summary				C	Calculated Va	riate			
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	10	27.4	17	35	1.64	5.19	18.9%	0.0%	
6.25		10	31.4	17	38	1.89	5.97	19.0%	-14.6%	
12.5		10	32.1	26	39	1.27	4.01	12.5%	-17.2%	
25		10	28.1	5	35	2.81	8.88	31.6%	-2.55%	
50		10	18.9	13	35	2.13	6.72	35.6%	31.0%	
100		10	16.8	12	23	1.13	3.58	21.3%	38.7%	

Graphics

(Client:			Lehigh Po	rmanent		. M	laterial:			Pond 14	1		_	Te	st Date:	3/26/13	
Pro	ject #:	20	780		Test ID:	512	51	F	Random	ization:		0.7.	1		-		Water:	1,21
	Day	pH New	Old	D.O.	Old	Cond. (µS/cm)	Temp (°C)		-			rvival / R						SIGN-OFF
	0	7.99	Old	New	Old	348	25.6	A	В	C	D	E 0	F	G	Н	0	0	Date: 314 3 New WO: J Test Init Sol'n Prep: Time 1600
	1	7.77	8.0(8.5	7.3	335	25.9	0	0	0	0	0	0	0	0	0	0	Date: 17.1 New WQ: TOVB Counts VB Sol'n Prep Old WQ: TA Time (446)
	2	7.99	792	8.8	7.2	348	25.9	O	0	0	ڻ ن	6	0	٥	Ó	0	0	Date 78 73 New WQ: Counts Sol'n Prep: Old WO Time 155 C
rol	3	7.84	7.90	8.0	8.6	543	25.7	٥		J	5	4	3	4	0	0	0	Date: 3.29.3 New WQ: 1/2 Counts Sol'n Prep: Old WQ: D5 Time 1.50
er Cont	4	7.85	8.10	8.7	7.7	342	25.7	5	S	5	۵	13	n	0	5	5	4	Date: 3.30 John WQ: FON Counts Sol'n Prep: Old WQ: SS Time (7) S
Lab Water Control	5	7.94	8.09	8.6	7.4	344	25.7	12	12	Ю	רב	O	6	И	10	À	12	Date: 331.13 New WQ: OUS Counts Sol'n Prep: Old WQ: #B Time 745
1	6	8.21	8.06	8.5	6.6	347	25.8	0	10	13	18	14	8	13	12	10	15	Date: 911/13 New WQ: Counts JA Sol'n Prep: GO Old WQ SVV Timb 130
	7																	Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
	8																	Date: Old WQ: Counts: Time:
1							Total=	17	27	78			22	28	27	26	33	Mean Neonates/Female = 27.4
	Day	New	H Old	D. New	O. Old	Cond. (μS/cm)		Α	В	С	Surviva D	/ Reprod	duction F	G	Н	I	J	Sample ID
01010101010	0	7.92		9.0		423		0	0	0	0	0	0	0	O	0	0	31336
	I	7.87	7.93	8.4	7.8	407		0	0	0	0	0	0	0	0	0	0	31336
	2	7.96	7.91	9.0	7-0	420		0	0	Ö	ی	O	O	0	٥	Э	ව	31380
	3	7.90	2.98	8.1	8.5	419		Ø	0	٥	S	5	3	4	5	0	٥	31380
6.25%		7.87			7.6	423		6	5	Ų	16	ĮΟ	9	0	٥	5	6	31434
9	5	7.94	B.06	8.6	7.5	416		12	14	14	0	0	0	10	13	10	11	31434
	6	8-16	8.05	8.4	7.2	410		18	17	18	17	16	16	17	17	15	0	31434
	7										•							_
	8							0										
							Total=	36	36	38	32	31	28	31	35	30	17	Mean Neonates/Female = 31.4

(Client:		1	Lehigh Po	ermanent	e		_ N	faterial:		1	Pond 1	4		_	Te	st Date:	3/26/13
Pro	ject #:	20	780		Test ID:	512	51	-								Control	Water:	Modified EPAMH
	Day	pH New	Old	D.O. New	Old	Cond. (µS/cm)	Temp (°C)	A	В	С	Su	rvival / R	Reproduct F	ion G	Н	I	J	SIGN-OFF
88888	0	7.92	0.0	9.1	Old	489		0	0	0	0	0	0	0	0	Ó	0	
	1	7.94	7.90	-	7.5	181		0	0	0	0	0	0	0	0	٥	0	
	2	7.95	7.98		6.4	498		O	0	0.	0	0	0	σ	0	9	0	
	3	7.95	8.07		8.6	497-		6	0	6	5	5	٥	S	4	σ	ס	
12.5%	4	7.89	8.02		7.9	490		5	6	0	10	9	Ç	9	0	4	5	
12.	5	7.97	8.08		7.7	484		13	13	16	15	14	11	0	12	11	12	
	6	8-18	8.09	8-4	7.1	484		19	اله	17	0	O	9	15	14	16	17	
	7														,			
	8																	
1010174000							Total≖	37	35	39				29	30	3	34	Mean Neonates/Female = 32-1
	Day	New	Old	D. New	O. Old	Cond. (µS/cm)		Α	В	С	Surviva	/ Repro	duction F	G	Н	1	J	
DAGGER	0	7.96		9.3		618		0	٥	0	0	0	0	0	0	0	0	
	I	8.01	7.91	8.5	7.6	612		0	0	0	0	0	0	0	0	0	0	
	2	8,00	9.04	8.8	6.7	629		0	0	0	٥	0	9	0	0	0	0	
	3	7.99	8.12	8.4	8.5	620		0	0	0	5	5	4	ß	4	0	О	
25%	4		806		8.0	629		5	6	5	6	0	ю	0	0	4	S	
7	5	8.03	8.12	8.6	7.7	611		μ	12	11	13	0	0	11	¥ŧ	10	0	
	6	8.18	8.15	8-5	7,4	614		17	17	5	15	0	8	15	13	16	17	
	7																	
7.	8												ne entre	7,1		П	-	
							Total=	33	35	31	33	5	22	32	28	30	32	Mean Neonates/Female = 28-

(Client:]	Lehigh P	ermanent	е		M	laterial:			Pond 1	4			Te	st Date:	3/26/13
Pro	ject #:	20	780	-	Test ID:	512	51									Contro	Water:	: Modified EPAMH
	Day	pН		D.O.		Cond.	Temp			,			Reproduc					SIGN-OFF
	_	New	Old	New	Old	(µS/cm)	(°C)	A	В	С	D	Е	F	G	Н	1	J	888888888888888888888888888888888888888
	0	8.04		98		858		0	0	0	0	o	0	O	0	0	0	
	ı	8.0511	8.07	8711	7.5	842 NA		0	0	0	0	0	0	0	0	0	0	
	2	8.04	8.13	8.9	7.0	872		0	0	Ø	٥	0	5	0	0	0	0	
	3	8.07	8.20	8.6	8.6	859		0	0	0	0	5	5	ð	Ø	0	ď	
20%	4	8.12	8.15	8.7	7.8	866		5	5	4	5	10	0	5	5	G	5	
)3	5	8.11	8.17	8.9	7.6	855		ſ,p	12	٩	h	ð	13	1.95	9	10	10	
	6	8-28		8.9	7.4	844		0	0	0	7	G	17	0	0	0	0	
	7	- 000			,,,							,						
	8																	
							Total=	15	17	13	23	7U	35	17	14	16	15	Mean Neonates/Female = 18-9
	Day	р	:::::::::::::::::::::::::::::::::::::	D.	O.	Cond.		1.5		בי		/ Reprod		1 /	,-(10	15	Mean Neonates/Female = 18-9
		New	Old	New	Old	(μS/cm)		Α	В	С	D	E	F	G	Н	I	J	
	0	ÿ .] @		10.6		1273		0	0	0	0	0	0	0	0	O	0	
	1	8.13	80.8	9.5	7.7	1265		0	0	0	0	0	0	0	0	0	0	
	2	8.13	803	9.1	63	1300		٥	6	0	٥	0	0	٥	0	٥	O	
	3	કૃ.ાપ	8.14	8.8	8-5	1276		O	4	4	4	ς	4	4	2	٥	٥	
%	4	8.19	8.13	9.0	7.9	1265		4	0	0	8	7	8	0	0	4	5	
100%	5	817	8.22		7.5	1261		<u>`</u>	9	12	5	-	ව	15	13	8	н	
	6	0.11	8.16			1253		12	G			0			13			
	7	8 ·55	0.10	1.0	7.5	ردح،		0	7	<u>%</u>	0	6	0	×Ισ		0	0	
											-			-				
	8							1 (1		24		II.						
							Total=	ال	22	7/16	17	18	12	XIL	23	12	101	Mean Neonates/Female = 16.8

CETIS Analytical Report

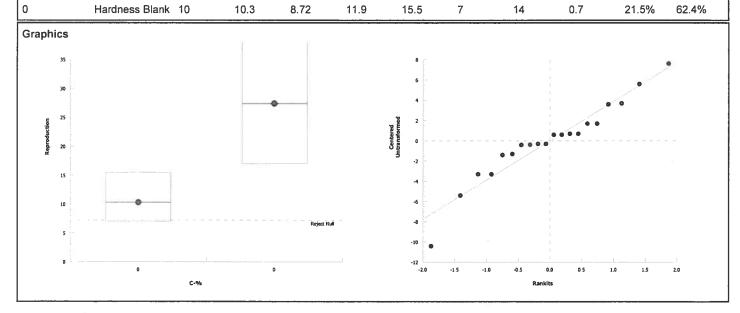
Report Date: Test Code: 02 Apr-13 09:51 (p 1 of 1)

							*			
Ceriodaphnia	Survival and Re	eproduct	tion Test	·						Pacific EcoRis
Analysis ID: Analyzed:	02-4339-6444 02 Apr-13 9:51		indpoint: Surv inalysis: Sing		ntingency Ta	ble		Version: al Results:	CETISv1.8.5 Yes	
Data Transfor	rm	Zeta	Alt Hyp	Trials	Seed			Test Resul	t	
Untransformed	d		C > T	NA	NA			Passes sur	vival	
Fisher Exact	Test									
Control	vs Control		Test Stat	P-Value	P-Type	Decision	(α:5%)			
Lab Water Co	ntrol Hardness	Blank	1	1.0000	Exact	Non-Sign	ificant Effect			
Data Summar	ry									
C-%	Control Type	NR	R	NR + R	Prop NR	Prop R	%Effect			
0	Hardness Blank	10	0	10	1	0	0.0%			
0	Lab Water Cont	10	0	10	1	0	0.0%			
Graphics			-							
1.0	•		•							
0.9										
0.8										
0.7										
ie i										
A. 0.6										
0.5										
0.4										
0 3										
0.2										
0 1										

02 Apr-13 09:50 (p 2 of 2) 51251 | 08-7754-4734

Test Code:

Ceriodaphnia	Survi	val and Re	produ	uction	Test								Paci	fic EcoRis
Analysis ID: Analyzed:	-	039-6739 .pr-13 9:50		Endp Analy		oroduction ametric-Two	Sample)			IS Version		1.8.5	
Data Transfor	rm		Zeta		Alt Hyp	Trials	Seed			PMSD	Test Res	sult		
Untransformed	t		NA		C > T	NA	NA			11.3%	Fails rep	roduction		
Equal Variance	e t Tv	vo-Sample	Test						-					
Control	vs	Control			Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision	n(α:5%)		
Lab Water Cor	ntrol	Hardness	Blank		9.58	1.73	3.09	18	<0.0001	CDF	Significa	nt Effect		
ANOVA Table								•						
Source		Sum Squa	res		Mean Squ	ıare	DF		F Stat	P-Value	Decisio	n(α:5%)		
Between		1462.05			1462.05		1		91.9	<0.0001	Significa	nt Effect		
Error		286.5			15.91667		18							
Total		1748.55					19		_					
Distributional	Tests	::::::::::::::::::::::::::::::::::::::			· · · · · · · · · · · · · · · · · · ·									
Attribute		Test				Test Stat	Critica	Į.	P-Value	Decision	(α:1%)			
Variances		Variance I	Ratio F	F		5.5	6.54		0.0183	Equal Var	iances			
Distribution		Shapiro-W	/ilk W	Norma	ality	0.945	0.866		0.2928	Normal D	istribution			
Reproduction	Sumi	mary	···	-										
C-%	Conti	rol Type	Cour	nt	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab V	Vater Contr	10		27.4	23.7	31.1		15.5	17	35	1.64	18.9%	0.0%
Δ.	Llorde	one Blenk	10		10.2	0.70	44.0		4 E E	7	4.4	0.7	24 50/	60.40/



(Client:		I	Lehigh P	ermanent	e		. M	laterial:		Hard	ness Co	ontrol			Те	st Date:	3/26/13
Pro	ject #:	207	780	•	Test 1D:	512	48	. I	Random	ization:		10.2	.			Contro	Water:	Modified EPAMH
	Day	рН		D.O.	,	Cond.	Temp				Su	rvival / R	eproduct	ion				SIGN-OFF
		New	Old	New	Old	(μS/cm)	(°C)	Α	В	С	D	E	F	G	Н	I	J	SIGN-OI1
	0	8.63		8.9		2406	25.4	0	0	0	0	0	0	0	0	0	0	Date: 3/21/13 New WQ: Test Init. Sol'n Prep: Time 1/155
	1	8.67	8.55	8-8	7.6	2415	25.9	0	0	0	0	0	0	0	0	0	0	Date: 3/71/3 New WQ: FOUR Counts // Sol'n Prep. Old WQ: JCA Time 550
	2	8.58	9.45	8.2	7.9	2447	25.9	0	စ	0	0	0	0	o	ن	0	0	Date: 3.28 (New WQ: D5 Counts: Sol'n Prep: Old WQ: M Time: 1500
trol	3	8.63	8.69	8.2	8.4	2449	ಖ೧	a	0	0	4	a	0	0	၁	6	2	Sol'n Prep: Old WQ: AS Counts Old WQ: AS Time! 730
ss Control	4	3.61	8.63	8.2	7.8	2414	25.7	3	2	0	0	0	0	3	2	١	O	Date: 3.30 New WQ: DH Counts Sol'n Prep: Old WQ: Time 1500
Hardness	5	8.59	8.65	9-2	7.8	2484	25.7	Q	a	4	a	Ø	4	0	3	Ç	Ó	Date: 3.31.13 New: WQ! TOV7 Counts Sol'in Prep: Old WQ: RA Times
H	6	8.62	18.49	9-3	7.7	2476	75.8	5	3	9	ی	5	5	9	6	7	9	Sol'n Prep: Old WQ: SV Time 1500
	7				-													Date: New WQ: Counts Sol'n Prep: Old WQ: Time:
	8																	Date: New WQ: Counts Sol'n Prep: Old WQ: Time
							Total=	10	7	16	12	フ	G	17	11	14	11	Mean Neonates/Female = 10.3

(Client:		1	Lehigh Pe	ermanent	e		Materia	al: Meter IDs	Test Date:	3/26/1	3	
Pro	ject #:	207	780		Test ID:	512	51			Control Water:	Mo	dified EPAM	Н
	Day	P New	H Old	D. New	.O. Old	Cond. (µS/cm)	Temp (°C)					SIGN-OFF	
	0	6116		R00 4		E07	30A				Date: 3/26/13	New WQ:	Old WQ
	1	PH15	PH19	P-D07	R007	ELOM	30A				3/27/17	New WQ:	Old WQ:
	2	pH15	PHIS	12004	R06	Ecos	36 A				Date: 03. 28.13	New WQ:	Old WQ:
	3	pH15	PIHG	ROUT	- godi	Ecol	30 A				Date:	New WO:	Old WQ
Meter ID's	4	PH19	p#16	PDOY	PDOF	Eco8	304				Date:	New WO:	Oldwo:
Mel	5	PH19	p416	POOG	R067	FC06	35 A				3.31-13	New WQ:	Old WQ:
	6	Phis	pH18	MO6	PC07	Ec06	30A				4/1/13	New WO:	8VV Old WQ
	7										Date:	New WQ:	Old WQ
	8										Date:	New WQ:	Old WQ

Appendix J

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 4A Site Water to Fathead Minnows



CETIS Summary Report

Report Date: Test Code: 04 Apr-13 09:44 (p 1 of 3)

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51252 | 03-9467-4998

Chronic Larva	I Fish Survival and G	rowth Test						Pacific EcoRisk
Batch ID: Start Date: Ending Date: Duration:	03-5583-4163 26 Mar-13 15:15 02 Apr-13 08:20 6d 17h	Test Type: Protocol: Species: Source:	Growth-Survi EPA-821-R-0 Pimephales p Aquatox, AR	2-013 (2002) promelas		D B	nalyst: Piluent: Brine: .ge:	Melinda Hooper Laboratory Water Not Applicable 1
1 '	04-5889-5807 25 Mar-13 11:20 25 Mar-13 15:30 28h (18.1 °C)	Code: Material: Source: Station:	Effluent Effluent Lehigh Permi Pond 4A	anente		_	lient: roject:	Lehigh Permanente 20780
Batch Notes:	Rep 100B (outlier) Inc	luded					,	
Comparison S	Summary					•		
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Met	hod
04-0850-0080	7d Survival Rate	0	>0		17.0%		Equ	al Variance t Two-Sample Test
16-0952-5454	7d Survival Rate	100	>100	NA	33.0%	1	Stee	el Many-One Rank Sum Test
07-9892-1617	Mean Dry Biomass-mg	g 0	>0		14.6%		Equ	al Variance t Two-Sample Test
03-0551-3915	Mean Dry Biomass-mg	g 100	>100	NA	35.7%	1	Stee	el Many-One Rank Sum Test
10-0881-2326	Mean Dry Weight-mg	0	>0		19.9%		Equ	al Variance t Two-Sample Test
01-7997-7172	Mean Dry Weight-mg	100	>100	NA	21.9%	1	Dun	nett Multiple Comparison Test
Point Estimate	e Summary							
Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Met	hod
14-6870-3861	Mean Dry Biomass-me	g IC5	64.1	50.5	N/A	1.561	Line	ear Interpolation (ICPIN)
		IC10	78.1	51	N/A	1.28		
		IC15	92.2	51.5	N/A	1.085		
		IC20	>100	N/A	N/A	<1		
		IC25	>100	N/A	N/A	<1		
		IC40	>100	N/A	N/A	<1		
		IC50	>100	N/A	N/A	<1		
07-6957-2875	Mean Dry Weight-mg	IC5	>100	N/A	N/A	<1	Line	ear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1		
		IC15	>100	N/A	N/A	<1		
		IC20	>100	N/A	N/A	<1		
		IC25	>100	N/A	N/A	<1		
		IC40	>100	N/A	N/A	<1		
		IC50	>100	N/A	N/A	<1		

04 Apr-13 09:44 (p 2 of 3)

Test Code: 51252 | 03-9467-4998

Chronic Larva	l Fish Survival a	nd Grow	th Test							Pacif	ic EcoRisk
7d Survival Ra	te Summary	······································									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.9	0.847	0.953	0.7	1	0.0707	0.141	15.7%	0.0%
0	Lab Water Contr	4	0.95	0.913	0.987	0.8	1	0.05	0.1	10.5%	-5.56%
6.25		4	0.9	0.847	0.953	0.7	1	0.0707	0.141	15.7%	0.0%
12.5		4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
25		4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
50		4	0.925	0.906	0.944	0.9	1	0.025	0.05	5.41%	-2.78%
100		4	0.725	0.565	0.885	0.1	1	0.214	0.427	58.9%	19.4%
Mean Dry Bion	nass-mg Summa	ary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.791	0.77	0.812	0.729	0.864	0.0277	0.0555	7.02%	0.0%
0	Lab Water Contr	4	0.747	0.711	0.784	0.619	0.84	0.0489	0.0978	13.1%	5.53%
6.25		4	0.711	0.694	0.729	0.649	0.757	0.0238	0.0475	6.68%	10.1%
12.5		4	0.89	0.876	0.904	0.846	0.934	0.0189	0.0377	4.24%	-12.5%
25		4	0.85	0.834	0.867	0.787	0.885	0.0219	0.0437	5.14%	-7.52%
50		4	0.864	0.852	0.876	0.833	0.906	0.0157	0.0315	3.64%	-9.26%
100		4	0.668	0.533	0.803	0.128	0.875	0.181	0.362	54.2%	15.5%
Mean Dry Weig	ght-mg Summar	y									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.895	0.838	0.952	0.787	1.12	0.0766	0.153	17.1%	0.0%
0	Lab Water Contr	4	0.786	0.768	0.804	0.726	0.84	0.0241	0.0483	6.14%	12.2%
6.25		4	0.802	0.765	0.838	0.702	0.927	0.0483	0.0966	12.1%	10.5%
12.5		4	0.939	0.914	0.965	0.846	1	0.0343	0.0686	7.31%	-4.94%
25		4	0.899	0.866	0.932	0.787	0.983	0.0441	0.0882	9.81%	-0.41%
50		4	0.935	0.926	0.945	0.906	0.966	0.0127	0.0254	2.71%	-4.45%
100		4	1.01	0.935	1.08	0.872	1.28	0.0959	0.192	19.1%	-12.4%

Report Date: Test Code: 04 Apr-13 09:44 (p 3 of 3) 51252 | 03-9467-4998

						rest oode.	01202 00-0401 4000
Chronic I	Larval Fish Survival a	and Grow	th Test				Pacific EcoRisk
7d Surviv	val Rate Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	1	0.7	0.9	1		
0	Lab Water Contr	0.8	1	1	1		
6.25		0.7	1	1	0.9		
12.5		1	1	0.9	0.9		
25		1	0.9	1	0.9		
50		0.9	1	0.9	0.9		
100		1	0.1	0.8	1		
Mean Dry	/ Biomass-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	0.864	0.784	0.729	0.787		
0	Lab Water Contr	0.619	0.804	0.84	0.726		
6.25		0.649	0.757	0.702	0.738		
12.5		0.846	0.934	0.876	0.904		
25		0.787	0.885	0.872	0.858		
50		0.869	0.906	0.833	0.849		
100		0.872	0.128	0.798	0.875		
Mean Dry	Weight-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	0.864	1.12	0.81	0.787		
0	Lab Water Contr	0.774	0.804	0.84	0.726		
6.25		0.927	0.757	0.702	0.82		
12.5		0.846	0.934	0.973	1		
25		0.787	0.983	0.872	0.953		
50		0.966	0.906	0.926	0.943		
100		0.872	1.28	0.997	0.875		
7d Surviv	al Rate Binomials						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	10/10	7/10	9/10	10/10		
0	Lab Water Contr	8/10	10/10	10/10	10/10		
6.25		7/10	10/10	10/10	9/10		
12.5		10/10	10/10	9/10	9/10		
25		10/10	9/10	10/10	9/10		
50		9/10	10/10	9/10	9/10		
100		10/10	1/10	8/10	10/10		

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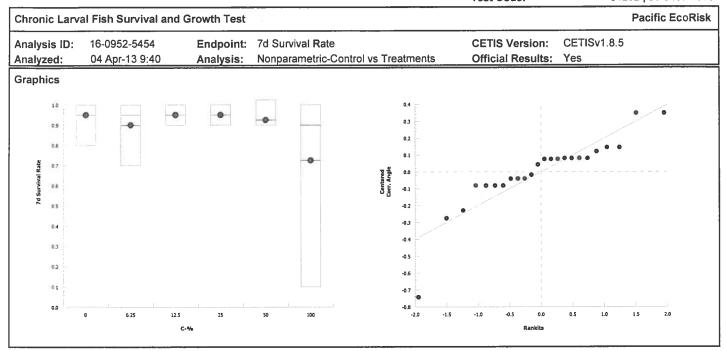
Test Code: 51252 | 03-9467-4998

Analyzed: 04 Apr-13 9:40 Analysis: Nonparametric-Control vs Treatments Official Results: Yes Data Transform Zeta Alt Hyp Trials Seed PMSD NOEL LOEL Angular (Corrected) NA C > T NA NA 33.0% 100 >100 Steel Many-One Rank Sum Test	Sv1.8.5	ific EcoRis
Analyzed: 04 Apr-13 9:40 Analysis: Nonparametric-Control vs Treatments Official Results: Yes Data Transform Zeta Alt Hyp Trials Seed PMSD NOEL LOEL Angular (Corrected) NA C > T NA NA 33.0% 100 >100 Steel Many-One Rank Sum Test	TOEL	
Analyzed: 04 Apr-13 9:40 Analysis: Nonparametric-Control vs Treatments Official Results: Yes Data Transform Zeta Alt Hyp Trials Seed PMSD NOEL LOEL Angular (Corrected) NA C > T NA NA 33.0% 100 >100 Steel Many-One Rank Sum Test		
Data Transform Zeta Alt Hyp Trials Seed PMSD NOEL LOEL Angular (Corrected) NA C > T NA NA 33.0% 100 >100 Steel Many-One Rank Sum Test		
Angular (Corrected) NA C > T NA NA 33.0% 100 >100 Steel Many-One Rank Sum Test		TU
		1
Control vs C-% Test Stat Critical Ties DF P-Value P-Type Decision(α:5%)		
Lab Water Control 6.25 16 10 1 6 0.6105 Asymp Non-Significant E	fect	
12.5 17 10 1 6 0.7334 Asymp Non-Significant E		
25 17 10 1 6 0.7334 Asymp Non-Significant E		
50 15.5 10 1 6 0.5438 Asymp Non-Significant E		
100 15.5 10 2 6 0.5438 Asymp Non-Significant E		
ANOVA Table		
Source Sum Squares Mean Square DF F Stat P-Value Decision(α:5%)		
Between 0.2192582 0.04385164 5 0.747 0.5986 Non-Significant E	fect	
Error 1.056238 0.0586799 18		
Total 1.275496 23		
Distributional Tests		
Attribute Test Test Stat Critical P-Value Decision(q:1%)		
Variances Bartlett Equality of Variance 15.3 15.1 0.0090 Unequal Variances		
Distribution Shapiro-Wilk W Normality 0.837 0.884 0.0013 Non-normal Distribution		
7d Survival Rate Summary		
C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std E	rr CV%	%Effect
0 Lab Water Contr 4 0.95 0.791 1 1 0.8 1 0.05	10.5%	0.0%
6.25 4 0.9 0.675 1 0.95 0.7 1 0.070	7 15.7%	5.26%
0.20 4 0.8 0.070 1 0.80 0.7 1 0.070	9 6.08%	0.0%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028		0.0%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028		
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028		2.63%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028	9 6.08%	
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025	9 6.08% 5.41%	2.63%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary	9 6.08% 5.41% 58.9%	2.63%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary	9 6.08% 5.41% 58.9% rr CV%	2.63% 23.7%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std E	9 6.08% 5.41% 58.9% rr CV% 2 11.4%	2.63% 23.7% %Effec
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std E 0 Lab Water Cont 4 1.34 1.09 1.58 1.41 1.11 1.41 0.076	9 6.08% 5.41% 58.9% rr CV% 2 11.4% 4 15.7%	2.63% 23.7% %Effec 0.0%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.858 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std E 0 Lab Water Cont 4 1.34 1.09 1.58 1.41 1.11 1.41 0.076 6.25 4 1.27 0.95 1.58 1.33 0.991 1.41 0.099	9 6.08% 5.41% 58.9% rr CV% 2 11.4% 4 15.7% 7.07%	2.63% 23.7% %Effec 0.0% 5.22%
12.5 4 0.95 0.858 1 0.95 0.9 1 0.028 25 4 0.95 0.845 1 0.95 0.9 1 0.028 50 4 0.925 0.845 1 0.9 0.9 1 0.025 100 4 0.725 0.0452 1 0.9 0.1 1 0.214 Angular (Corrected) Transformed Summary C-% Control Type Count Mean 95% LCL 95% UCL Median Min Max Std E 0 Lab Water Cont 4 1.34 1.09 1.58 1.41 1.11 1.41 0.076 6.25 4 1.27 0.95 1.58 1.33 0.991 1.41 0.099 12.5 4 1.33 1.18 1.48 1.33 1.25 1.41 0.047	9 6.08% 5.41% 58.9% rr CV% 2 11.4% 4 15.7% 7.07% 7.07%	2.63% 23.7% %Effect 0.0% 5.22% 0.39%

Analyst: QA: QA:

Report Date: Test Code: 04 Apr-13 09:44 (p 2 of 5)

51252 | 03-9467-4998

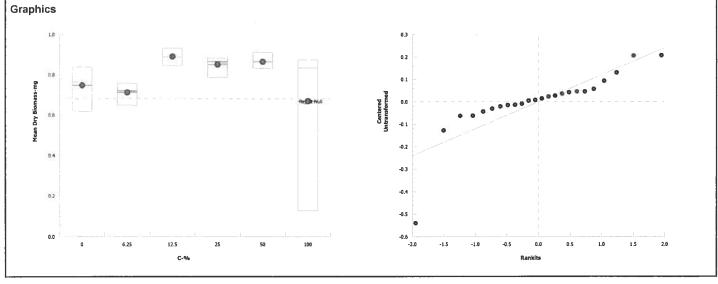


Report Date: Test Code: 04 Apr-13 09:44 (p 5 of 5)

51252 | 03-9467-4998

									oode.			
Chronic Larval Fis	sh Survival ar	d Growth	Test								Pacif	fic EcoRisk
	0551-3915 Apr-13 9:41	End _i Anal		an Dry Biom nparametric-			reatments		S Version		8.5	
Data Transform		Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed		AV	C > T	NA	NA			35.7%	100	>100	NA	1
Steel Many-One R	ank Sum Tes	t .										
Control vs	C-%		Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision	ι(α:5%)		
Lab Water Control	6.25		16	10	0	6	0.6105	Asymp	Non-Sign	ificant Effect		
	12.5		26	10	0	6	0.9999	Asymp	Non-Sign	ificant Effect		
	25		24	10	0	6	0.9989	Asymp	Non-Sign	ificant Effect		
	50		25	10	0	6	0.9997	Asymp	Non-Sign	ificant Effect		
	100		20	10	0	6	0.9516	Asymp	Non-Sign	ificant Effe c t		_
ANOVA Table												
Source	Sum Square	es	Mean Squ	uare	DF		F Stat	P-Value	Decision	ι(α:5%)		
Between	0.1678998		0.0335799	95	5		1.37	0.2819	Non-Sign	ificant Effect		
Error	0.4414364		0.0245242	24	18							
Total	0.6093361				23							
Distributional Tes	ts											
Attribute	Test			Test Stat	Critic	al	P-Value	Decision	(α:1%)			
Variances	Bartlett Equ	ality of Va	riance	27.2	15.1		<0.0001	Unequal \	/ariances	·		
Distribution	Shapiro-Wi	k W Norm	ality	0.738	0.884		<0.0001	Non-norm	al Distribut	ion		

Mean Dry	Biomass-mg Summ	ary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	4	0.747	0.592	0.903	0.765	0.619	0.84	0.0489	13.1%	0.0%
6.25		4	0.711	0.636	0.787	0.72	0.649	0.757	0.0238	6.68%	4.78%
12.5		4	0.89	0.83	0.95	0.89	0.846	0.934	0.0189	4.24%	-19.1%
25		4	0.85	0.781	0.92	0.865	0.787	0.885	0.0219	5.14%	-13.8%
50		4	0.864	0.814	0.914	0.859	0.833	0.906	0.0157	3.64%	-15.7%
100		4	0.668	0.0923	1.24	0.835	0.128	0.875	0.181	54.2%	10.6%
								 			



04 Apr-13 09:44 (p 1 of 1)

Test Code:

51252 | 03-9467-4998

Chronic Larval Fish Survival and Growth Test

Analysis ID: 14-6870-3861 Endpoint: Mean Dry Biomass-mg

Analyzed: 04 Apr-13 9:41 Analysis: Linear Interpolation (ICPIN)

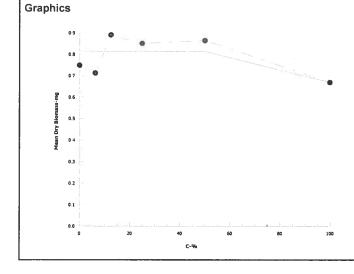
Pacific EcoRisk

CETIS Version: CETISv1.8.5

Official Results: Yes

X Transform Linear		Y Transform	Seed	4	Resamples	Exp 95% CL	Method
		Linear	566562		200	Yes	Two-Point Interpolation
Point E	stimates						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL	
IC5	64.1	50.5	N/A	1.561	NA	1.98	
IC10	78.1	51	N/A	1.28	NA	1.961	
IC15	92.2	51.5	N/A	1.085	NA	1.942	
IC20	>100	N/A	N/A	<1	NA	NA	
IC25	>100	N/A	N/A	<1	NA	NA	
IC40	>100	N/A	N/A	<1	NA	NA	
IC50	>100	N/A	N/A	<1	NA	NA	

Mean Dry Biomass-mg Summary										
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	0.747	0.619	0.84	0.0489	0.0978	13.1%	0.0%	
6.25		4	0.711	0.649	0.757	0.0238	0.0475	6.68%	4.78%	
12.5		4	0.89	0.846	0.934	0.0189	0.0377	4.24%	-19.1%	
25		4	0.85	0.787	0.885	0.0219	0.0437	5.14%	-13.8%	
50		4	0.864	0.833	0.906	0.0157	0.0315	3.64%	-15.7%	
100		4	0.668	0.128	0.875	0.181	0.362	54.2%	10.6%	



7 Day Chronic Fathead Minnow Toxicity Test Data

Client:	Le	high Permanent	e	Organism Log#:	7154 Age: 248 hrs	
Test Material:		Pond 4A		Organism Supplier:	Aquatox	
Test ID#:	51252	Project #:	20780	Control/Diluent:	ЕРАМН	
Test Date:	3126113	Rando	mization: 4.7.3	Control Water Batch:	1581	

Treatment	Temp pH		D.O. (mg/L)		Conductivity		# Live C	SIGN-OFF			
(%)	(°C)	new	old	new	old	(μs/cm)	A	В	С	D	
Lab Water	<i>ે</i> 95.5	8.14	7.91	8.5	7.8	33,2	8	(0	10	10	3.30.13
6.25	<i>as.</i> 5	8.04	7.89	8.6	7.8	38-0	9	10	10	9	Sample ID: 3143!
12.5	<i>8</i> 5.5	8.00	7.84	8.7	7.7	455	10	.10	9	9	Test Solution Prep:
25	25.5	7.97	7.95	8.7	7.9	583	10	9	10	9	New MO: K
50	25. 5	7.92	8.08	8.6	7.9	838	[9	10	9	9	Renewal Time:
100	<i>45.5</i>	7.86	8.02	8.5	7.9	1366	10	6	Ø.	10	Renewal Signoff
Meter ID	30 A	PHIZ	PHIG	RAdo	PDOY	Eco7					Old WO FORS
Lab Water	25-7	8.10	7.70	8.4	6.3	299	8	10	10	10	3.31.13
6.25	257	7.97	7.66	8.6	6.9	387	7	10	10	9	Sample ID: 3 14 3 1
12.5	25.7	7.94	7,77	8.6	7.0	449	10	10	9	9	Test Solution Prep
25	25.7	7.91	7.80	9.0	6.8	598	10	9	10	9	New WO FOUR
50	25.7	7.89	7.98	9.3	7./	845	9	10	9	9	Renewal Time:
100	25.7	7.87	7.82	10.3	6.9	1305	10	2	8	10	Renewal Signoff
Meter ID	30 F)	DH19	DHIS	P004	RIOG	ECO6					Old WQ:
Lab Water	25.7	8.29	772	8.2	7-2	297	8	10	10	10	Date: 4/1/13
6.25	25.7	8,20	8-06	8.1	7.2	388	7	10	10	9	Sample ID: 3/43/
12.5	25.7	8.14	7.89	8.1	7.3	449	10	10	9	9	Test Solution Prep:
25	25.7	8.08	7.84	8.1	7.4	590	10	9	10	9	New WQ:
50	25.7	8.03	7.94	8.4	7-3	841	Ġ	10	9	9	Renewal Time: 10 30
100	25.7	7.95	7.96	8.9	7-3	1291	10	1	8	10	Renewal Signoff
Meter ID	25.7 30A	oH16	Phis	RD07	1206	BC04					Old WO
Lab Water	25.3		8.02		7-1	311	8	10	10	10	Date: 4/8/13
6.25	Q5.3		7-82		7-0	391	7	10	10	9	Sample ID:
12.5	85.3		743		6-9	460	10	10	9	9	Termination Time:
25	<i>85.</i> 3		7.71		7-0	609	10	9	10	9	Termination Signoff:
50	ଅଟ .3		7.19		7.1	860	9	10	9	9	Old WO
100	25-3		7.91		75	1297	10		8	10	
Meter 1D	30A		Ph16		enob	Bc07					

Client:		Lehigh Permanent	e	Organism Log#: _	7154 Age: L48h0
Test Material:		Pond 4A		Organism Supplier:	Agustoy
Test ID#:	51252	Project #:	20780	Control/Diluent:	ЕРАМН
Test Date:	3/26/13	Rando	mization: <u>4.7.3</u>	Control Water Batch:	15%\

Treatment	Temp	<u> </u>	Н	D.O.	(mg/L)	Conductivity		# Live (Organisms		SIGN-OFF
(%)	(°C)	new	old	new	old	(μs/cm)	А	В	С	D	
Lab Water	25.4	8.10		8.5		314	10	10	10	10	3.26.13
6.25	25.4	8.03		8.6		368	10	10	10	10	Sample ID: 31333
12.5	25.4	3.01		8.9		437	10	10	10	10	Test Solution Prep:
25	25.4	8.00		3.8		573	16	10	10	10	New WQ DH
50	25.4	7.98		9.2		843	10	10	10	10	Initiation Time:
100	25.4	7.94		9.6		1203	10	10	10	10	Initiation Signoff
Meter ID	30A	PHIB		R006		Ecob					
Lab Water	25.6	8.18	7.89	8.5	7.0	293	9	10	10	10	Date: 3. 27.13
6.25	25.6	8.06	7.81	8.5	7.5	382	9	10	10	10	Sample ID: 31333
12.5	25.6	8.05	7.82	8.6	7.6	455	10	10	9	10	Test Solution Prep:
25	25.6	8.02	7.90	8.6	7.3	598	10	10	10	9	New WQ FOVS
50	25.6	8.04	8.03	8.9	7.6	860	(0	10	10	10	Renewal Time:
100	25.6	7.97	7.48	9.3	7.5	1378	10	10	9	10	Renewal Signoff:
Meter ID	30A	PH15	4H16	2007	ROOY	ECOY					old wo DH
Lab Water	25.9	8.32	7.99	8.0	6.7	291	8	10	10	10	3.28.13
6.25	25.9	8.16	7.86	8.1	6.5	373	9	10	10	10	Sample ID: 31377
12.5	25.9	8.10	7.85	8.4	6.7	443	10	10	9	10	Test Solution Prep
25	25.9	8.03	7.85	8.4	6.4	57-5	10	10	10	9	New WO
50	25.9	7.99	7.99	8.4	6.6	828	9	10	10	9	Renewal Time:
100	25.9	7.93	7.96	8.7	6.9	1230	10	10	9	10	Renewal Signoff:
Meter ID	30A	PH16	PHIS	R007	RD06	E006					Old WQ:
Lab Water	J5.8	8.00	7-98	6.9	8.2	300	8	10	10	10	Date: 3.29.13
6.25	25.8	8.00	7.76	8.7	7.9	381	9	10	10	409	
12.5	25.8	8.00	7.95	8.7	7.9	458	10	10	9	9	Test Solution Prep:
25	25.8	8.61	7.86	8.9	8.0	604	10	9	10	9	New Wo
50	25.8	8.02	8,02	1.0	7.7	855	9	10	10	9	Renewal Time
100	25.8	7.98	8.00	9.6	7.7	1330	10	8	9	<i> (</i>	Renewal Signoff:
Meter ID	304	6115	6HI2	ROUL	2007	ECOY		Y			Old WQ: ps

Fathead Minnow Dry Weight Data Sheet

Client:	Lehigh Permanente	Test ID #:	51252	Project #	20780
Sample:	Pond 4A	Tare Weight Date:	3/31/4/1/13	Sign-off:	U
Test Date:	3/26/13	Final Weight Date:	4/3/13	Sign-off:	AJU

Pan ID	Concentration Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water A	159.27	165.46	0.619 10	0.62
2	В	143.37	151.41	0.894 10	0.80
3	С	141.10	149.50	0.840 10	0.84
4	D	164.90	172.16	0.126 10	0.73
5	6.25 A	167.66	174.15	0.49 10	0.65
6	В	140.39	148.46	0/757 10	0.76
7	С	187.90	194.92	0.702 10	0.76
8	D	156.88	164.26	6.738 10	0.74
9	12.5 A	166.54	175.00	0.846 10	0.85
10	В	161.73	171.07	16. 10	0.93
Ш	С	183.8 226.34	235.ID	Ø 10	0.88
12	D	172.70	181.74	lo	0.96
13	25 A	147.82	155.69	10	0.79
14	В	140.21	149.06	lo	0.86
15	C	141.27	149.99	10	0.87
16	D	149.22	157.80	10	0.86
17	50 A	181.10	189.79	lo	0.87
18	В	144.35	153.41	10	0.91
19	С	145.97	154.30	10	0.83
20	D	<i>148.</i> 91	157.40	10	0.85
21	100 A	150.17	158.89	lo	0.85
22	В	154.77	156.05	Į0	0.78
23	С	145.92	153.90	10	6.73
24	D	145.49	154.24	10	0.79
QA I		168.16	168.19		
QA 2		183.01	183.03		
QA3		127.98	128.03		
Balance 1D:		BALOI	BALDI		

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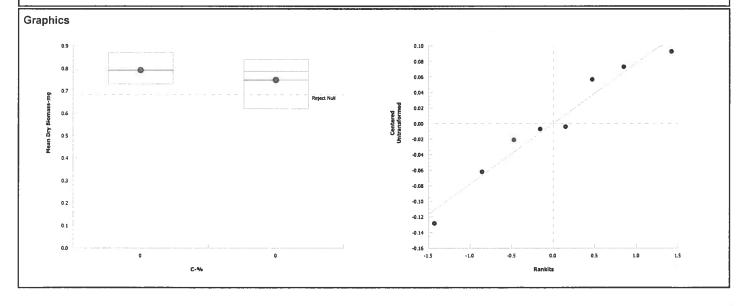
51252 | 03-9467-4998

Chroni												
Cilioni	ic Larv	al Fish Survival	and Gro	wth Test							Paci	fic EcoRis
nalys	is ID:	04-0850-0080		•	d Survival Rate				IS Version:		.8.5	
nalyz	ed:	04 Apr-13 9:40	A	nalysis: P	arametric-Two	Sample		Offic	ial Results	: Yes		
Data T	ransfo	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	Test Resu	ult		
Angula	ır (Corr	ected)	NA	C > T	NA	NA		17.0%	Passes 7	d survival ra	te	
qual	Varian	ice t Two-Sample	Test							-		
Contro	ol	vs Control		Test Sta	at Critical	MSD DF	P-Value	P-Type	Decision((a:5%)		
.ab Wa	ater Co	ontrol Hardness	Blank	0.557	1.94	0.243 6	0.2989	CDF	Non-Signi	ficant Effec	į.	
NOV	A Table	e										
ource	е	Sum Squa	ares	Mean S	quare	DF	F Stat	P-Value	Decision((α:5%)		
etwee	en	0.0097275	80	0.00972	7508	1	0.31	0.5977	Non-Signi	ficant Effect	į.	
rror		0.1881758		0.03136	264	6						
otal		0.1979033	i			7						·
istrib	utiona	I Tests										
ttribu	ite	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
/arianc	ces	Variance	Ratio F		1.7	47.5	0.6738	Equal Va	riances			
istribu	ution	Shapiro-V	Vilk W N	ormality	0.806	0.645	0.0332	Normal D	istribution			
d Sur	vival F	Rate Summary		· · · · · · · · · · · · · · · ·								
-%		Control Type	Count	Mean	95% LCL	95% UCL	Median	Min .	Max	Std Err	CV%	%Effec
		Lab Water Conti	r 4	0.95	0.791	1	1	0.8	1	0.05	10.5%	0.0%
		Hardness Blank	4	0.9	0.675	1	1	0.7	1	0.0707	15.7%	5.26%
ngula	ar (Cor	rected) Transfori	med Sur	nmary								
-%		Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
$\overline{}$		Lab Water Cont	4	1.34	1.09	1.58	1.41	1.11	1.41	0.0762	11.4%	0.0%
1			4	1.27	0.95	1.58	1.41	0.991	1.41	0.0994	15.7%	5.22%
	_	Hardness Blank					1.41	0.001	*****		10.770	
	ics	Hardness Blank					1,41				10.770	
		Hardness Blank									10.770	
	1.0	Hardness Blank			D		0.15	0.001			10.770	•
	0.9	Hardness Blank			•					/	13.774	•
iraphi	1.0	Hardness Blank			•		0.15		•	• ,•	•	•
Graphi	0.9	Hardness Blank			Reject Null	-	0.15		•	• /•	•	•
Rate	0.9	Hardness Blank			Reject Nutl	-	0.15			• •	•	•
iraphi	1.0 0.9 0.8	Hardness Blank			Reject Null	Centered	0.15		•	• •	•	•
Graphi	0.9 0.8 0.7	Hardness Blank			Reject Null	-	0.15		•	• •	•	•
Graphi Braphi	0.9 0.8 0.7 0.6 0.5	Hardness Blank			Reject Nutl	-	0.15		•	• •	•	•
Graphi	1.0 0.9 0.8 0.7 0.6 0.5	Hardness Blank			Reject Nut	-	-0.15 -0.05		•	• •	•	•
Graphi	0.9 0.8 0.7 0.6 0.5	Hardness Blank			Reject Null	-	0.15	•	•	• •	•	•
Graphi	1.0 0.9 0.8 0.7 0.6 0.5	Hardness Blank			Reject Hutl	-	-0.15 -0.05	•	•	• •	•	•

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51252 | 03-9467-4998

Chronic Larva	al Fis	h Survival a	and G	rowth Tes	t								Paci	fic EcoRisk
Analysis ID: Analyzed:		892-1617 Apr-13 9:41		Endpoint Analysis		an Dry Biom rametric-Two	•				S Version		.8.5	
Data Transfor	rm		Zeta	Alt	Нур	Trials	Seed			PMSD	Test Res	sult		
Untransformed	t		NA	C >	T	NA	NA			14.6%	Passes mean dry biomass-n		mass-mg	
Equal Variand	ce t Tv	wo-Sample	Test											
Control	vs	Control		Tes	t Stat	Critical	MSD D	F P-	Value	P-Type	Decision	n(a:5%)		
Lab Water Cor	ntrol	Hardness	Blank	-0.7	78	1.94	0.109 6	0.7	'669	CDF	Non-Sigr	nificant Effec	t	
ANOVA Table	•													
Source		Sum Squa	ires	Mea	an Sq	uare	DF	FS	Stat	P-Value	Decision	n(α:5%)		
Between		0.0038281	26	0.00	3828	126	1	0.6	05	0.4662	Non-Sigr	nificant Effect	t	
Error		0.0379605	1	0.00	06326	751	6							
Total		0.0417886	4				7							
Distributional	Test	5												
Attribute		Test				Test Stat	Critical	P-1	Value	Decision	(α:1%)			
Variances		Variance I	Ratio F	=		3.11	47.5	0.3	3764	Equal Var	iances			
Distribution		Shapiro-W	Vilk W	Normality		0.953	0.645	0.7	'460	Normal D	stribution			
Mean Dry Bio	mass	-mg Summ	ary											
C-%	Cont	rol Type	Cour	nt Mea	an	95% LCL	95% UCI	L Me	edian	Min	Max	Std Err	CV%	%Effect
0	Lab \	Vater Contr	4	0.74	7	0.592	0.903	0.7	'86	0.619	0.84	0.0489	13.1%	0.0%
0	Hard	ness Blank	4	0.79	91	0.703	0.879	0.7	786	0.729	0.864	0.0277	7.02%	-5.85%



Client:	Lehig	h Permanent	e	Organism Log#:	7154 Age:	248 hrs
Test Material:	Har	dness Control		Organism Supplier:	Aquato	XC
Test ID#:	51252	Project #:	20780	Control/Diluent:	ЕРАМН	
Test Date: _	3126H3	Randor	nization: 4.7.3	Control Water Batch:	31337	

			.,				# Live Organisms				
Test Treatment	Temp (°C)	new	H old	new	(mg/L) old	Conductivity (µS/cm)	Α	# Live C	Organisms C	D	SIGN-OFF
Hardness Control	25.4	7.67		8.8		2425	10	10	10	10	Date: 3.26.\3 Test Solution Prep:
											Initiation Time: \$15 Initiation Signoff:
Meter ID	30A	8149		R006		Ec06	New WO:	4			Initiation Signoff:
Hardness Control	25.6	8.68	8.58	8.8	6.0	2463	10	9	9	10	Date: 3.27.13 Test Solution Prep:
											Renewal Time: 12-15
Meter ID	30A	PHIS	PH16	PD07	ROOY	£004	New WQ:	}	Old WQ:	lf	Renewal Signoff: SVV
Hardness Control	25.9	8.66 8.58 PH	8.5%	8.7 6.6 OH	6.4	2456 2470	10	8	9	10	Date: 3.28.13 Test Solution Prep
											Renewal Time:
Meter ID	30A	P1+16	PH18	R007	RD06	Ec06	New WQ	f	old wo di	*	Renewal Signoff:
Hardness Control	25.8	8.66	854	8.8	6.9	z44 l	10	7	9	10	Date: 3. a.9. / 3 Test Solution Prep.
-											Renewal Time: 1245
Meter ID	30 A	PH15	SI H9	8007	2007	BCOT	New WQ:	1	Old WQ:	2	Renewal Signoff:
Hardness Control	255	8.66	8.56	8.5	8.1	2493	10	7	9	10	Date: 3. 20. 13 Test Solution Prep:
											Renewal Time: 1030
Meter ID	301	ZIFIG	PHIG	RDO6	PDOY	EC07	New WO	7	Old WOTO	rus	Renewal Signoff:
Hardness Control	257	8.57	8.45	8.9	6.1	2509	10	7	9	10	3.31.13 Test Solution Prep
											Renewal Time: 1305
Meter ID	3019	PHI9	DHIS	POOM	RAG	t7C06	New WO	UB	Old WQ:		Renewal Signoff:
Hardness Control	25.7	8.68	8.48 7.79	8.1	6.9	2495	10	7	9	10	Date: 41113 Test Solution Prep: 12
											Renewal Time: /036
Meter ID	30A	0416	PNIS	1907	0006	Ecoy	New WQ:	10	Old WQ:	чи	Renewal Signoff:
Hardness Control	ର ଽ.3		8-36		6.7	2525	10	ァ	9	10	Date: 4/2/1/3 Termination Time:
Meter ID	80A		946		evoy	BCO7			old wo.	4	Termination Signoff

Fathead Minnow Dry Weight Data Sheet

Client: Lehigh Permanente Test ID #: 51252 Project # 20780

Test Material: Hardness Control Tare Weight Date: 4/1/3 Sign-off: CA

Test Date: 3/26/13 Final Weight Date: 4/3/13 Sign-off: 51252

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
25		Α	142.88	151.52	(0	7.86
24	Hardness	В	159.60	167.44	10	0.78
27	Control	С	156.68	163.97	10	0.73
28		D	146.34	154.21	l)	0.79
XS-QA 3		-01	BALOI	BALO		

Appendix K

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 9 Site Water to Fathead Minnows



04 Apr-13 11:12 (p 1 of 3) 51253 | 11-8986-8609

Test Code:

Chronic Larva	ıl Fish Survival and Gı	owth Test		ter-edita at	7/5			Pacific EcoRisk
Batch ID: Start Date: Ending Date: Duration:	06-6897-7587 26 Mar-13 16:40 02 Apr-13 08:30 6d 16h	Test Type: Protocol: Species: Source:	Growth-Survi EPA-821-R-0 Pimephales p Aquatox, AR	02-013 (2002) promelas			Analyst: Diluent: Brine: Age:	Melinda Hooper Laboratory Water Not Applicable 1
-	12-6012-3482 25 Mar-13 12:20 25 Mar-13 15:30 28h (13 °C)	Code: Material: Source: Station:	Pond 9 Effluent Lehigh Perm Pond 9	anente			Client: Project:	Lehigh Permanente 20780
Comparison S	Summary							
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Met	hod
11-2082-6583	7d Survival Rate	0	>0		21.2%		Equ	al Variance t Two-Sample Test
09-5428-7602	7d Survival Rate	100	>100	NA	21.0%	1	Stee	el Many-One Rank Sum Test
12-2484-4748	Mean Dry Biomass-mg	g 0	>0		13.0%		Equ	al Variance t Two-Sample Test
19-5313-5716	Mean Dry Biomass-mg	100	>100	NA	16.7%	1		nett Multiple Comparison Test
10-0143-0446	Mean Dry Weight-mg	0	>0		19.4%		Equ	al Variance t Two-Sample Test
05-7531-8896	Mean Dry Weight-mg	100	>100	NA	15.5%	1	Dun	nett Multiple Comparison Test
Point Estimate	e Summary						Y	
Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Met	hod
07-7141-6006	Mean Dry Biomass-mg	IC5	>100	N/A	N/A	<1	Line	ar Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1		
		IC15	>100	N/A	N/A	<1		
		IC20	>100	N/A	N/A	<1		
		IC25	>100	N/A	N/A	<1		
		IC40	>100	N/A	N/A	<1		
		IC50	>100	N/A	N/A	<1		
07-2453-6568	Mean Dry Weight-mg	IC5	>100	N/A	N/A	<1	Line	ar Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1		
		IC15	>100	N/A	N/A	<1		
		IC20	>100	N/A	N/A	<1		
		IC25	>100	N/A	N/A	<1		
		IC40	>100	N/A	N/A	<1		
		IC50	>100	N/A	N/A	<1		

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Chronic L	arval Fish Survival a	nd Grow	th Test							Pacif	ic EcoRisk
7d Surviv	al Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.9	0.847	0.953	0.7	1	0.0707	0.141	15.7%	0.0%
0	Lab Water Contr	4	0.9	0.857	0.943	8.0	1	0.0577	0.115	12.8%	0.0%
6.25		4	0.925	0.869	0.981	0.7	1	0.075	0.15	16.2%	-2.78%
12.5		4	0.925	0.889	0.961	8.0	1	0.0479	0.0957	10.4%	-2.78%
25		4	0.925	0.889	0.961	0.8	1	0.0479	0.0957	10.4%	-2.78%
50		4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
100		4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
Mean Dry	Biomass-mg Summa	ary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.791	0.77	0.812	0.729	0.864	0.0277	0.0555	7.02%	0.0%
0	Lab Water Contr	4	0.702	0.674	0.73	0.62	0.777	0.0379	0.0759	10.8%	11.3%
6.25		4	0.742	0.711	0.773	0.641	0.84	0.0415	0.083	11.2%	6.19%
12.5		4	0.688	0.666	0.71	0.632	0.77	0.0292	0.0584	8.5%	13.0%
25		4	0.736	0.717	0.755	0.672	0.789	0.0257	0.0515	6.99%	6.92%
50		4	0.852	0.818	0.885	0.774	0.969	0.0448	0.0895	10.5%	-7.65%
100		4	0.867	0.85	0.883	0.822	0.925	0.0218	0.0435	5.02%	-9.54%
Mean Dry	Weight-mg Summar	у									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.895	0.838	0.952	0.787	1.12	0.0766	0.153	17.1%	0.0%
0	Lab Water Contr	4	0.782	0.772	0.792	0.755	0.82	0.0137	0.0274	3.5%	12.7%
6.25		4	0.811	0.779	0.842	0.723	0.916	0.0426	0.0852	10.5%	9.45%
12.5		4	0.746	0.728	0.764	0.68	0.79	0.0239	0.0479	6.41%	16.7%
25		4	0.803	0.764	0.843	0.672	0.9	0.0529	0.106	13.2%	10.3%
50		4	0.897	0.864	0.93	0.79	0.97	0.0441	0.0882	9.83%	-0.22%
100		4	0.913	0.901	0.925	0.869	0.944	0.016	0.032	3.5%	-1.98%

Analyst: QA

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Chronic I	Larval Fish Survival a	and Grow	th Test			Pacific EcoRisk
7d Surviv	/al Rate Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank		0.7	0.9	1	
0	Lab Water Contr		1	0.8	1	
6.25		1	0.7	1	1	
12.5		0.9	1	1	0.8	
25		0.8	1	0.9	1	
50		1	1	0.9	0.9	
100		1	1	0.9	0.9	
Mean Dry	Biomass-mg Detail			-		
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	0.864	0.784	0.729	0.787	
0	Lab Water Contr	0.62	0.777	0.656	0.755	
6.25		0.723	0.641	0.764	0.84	
12.5		0.67	0.68	0.77	0.632	
25		0.72	0.672	0.789	0.764	
50		0.969	0.79	0.774	0.873	
100		0.869	0.925	0.822	0.85	
Mean Dry	Weight-mg Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	0.864	1.12	0.81	0.787	 **
0	Lab Water Contr	0.775	0.777	0.82	0.755	
6.25		0.723	0.916	0.764	0.84	
12.5		0.744	0.68	0.77	0.79	
25		0.9	0.672	0.877	0.764	
50		0.969	0.79	0.86	0.97	
100		0.869	0.925	0.913	0.944	
7d Surviv	al Rate Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	10/10	7/10	9/10	10/10	
0	Lab Water Contr	8/10	10/10	8/10	10/10	
6.25		10/10	7/10	10/10	10/10	
12.5		9/10	10/10	10/10	8/10	
25		8/10	10/10	9/10	10/10	
50		10/10	10/10	9/10	9/10	
100		10/10	10/10	9/10	9/10	

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Test Code: Chronic Larval Fish Survival and Growth Test Pacific EcoRisk 09-5428-7602 Endpoint: 7d Survival Rate **CETIS Version:** CETISv1.8.5 Analysis ID: Analyzed: 04 Apr-13 11:11 Analysis: Nonparametric-Control vs Treatments Official Results: Yes **Data Transform NOEL TOEL** Zeta Alt Hyp Trials Seed **PMSD** LOEL TU Angular (Corrected) NA C > T NA NA 21.0% 100 >100 NA Steel Many-One Rank Sum Test Test Stat Critical Control vs C-% Ties DF P-Value P-Type Decision(a:5%) Lab Water Control 6.25 19 10 2 6 0.9055 Asymp Non-Significant Effect 12.5 19 Asymp Non-Significant Effect 10 3 6 0.9055 25 19 10 3 6 0.9055 Asymp Non-Significant Effect 50 20 10 2 0.9516 Non-Significant Effect 6 Asymp 100 20 10 2 0.9516 Non-Significant Effect 6 Asymp

ANOVA Table						
Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.01416641	0.002833281	5	0.125	0.9849	Non-Significant Effect
Error	0.4084757	0.02269309	18			
Total	0.4226421		23			

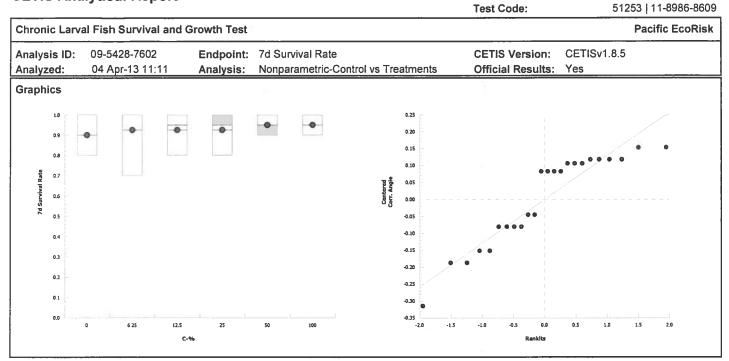
Distributional Tests	Distributional Tests												
Attribute	Test	Test Stat	Critical	P-Value	Decision(a:1%)								
Variances	Bartlett Equality of Variance	2.66	15.1	0.7521	Equal Variances								
Distribution	Shapiro-Wilk W Normality	0.873	0.884	0.0061	Non-normal Distribution								

7d Surviv	al Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	4	0.9	0.716	1	0.9	0.8	1	0.0577	12.8%	0.0%
6.25		4	0.925	0.686	1	1	0.7	1	0.075	16.2%	-2.78%
12.5		4	0.925	0.773	1	0.95	0.8	1	0.0479	10.4%	-2.78%
25		4	0.925	0.773	1	0.95	0.8	1	0.0479	10.4%	-2.78%
50		4	0.95	0.858	1	0.95	0.9	1	0.0289	6.08%	-5.56%
100		4	0.95	0.858	1	0.95	0.9	1	0.0289	6.08%	-5.56%

Angular (Corrected) Transformed Summary												
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect	
0	Lab Water Cont	4	1.26	0.98	1.54	1.26	1.11	1.41	0.088	14.0%	0.0%	
6.25		4	1.31	0.972	1.64	1.41	0.991	1.41	0.105	16.1%	-3.75%	
12.5		4	1.3	1.06	1.53	1.33	1.11	1.41	0.0735	11.3%	-2.82%	
25		4	1.3	1.06	1.53	1.33	1.11	1.41	0.0735	11.3%	-2.82%	
50		4	1.33	1.18	1.48	1.33	1.25	1.41	0.047	7.07%	-5.63%	
100		4	1.33	1.18	1.48	1.33	1.25	1.41	0.047	7.07%	-5.63%	

Analyst

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Test Code: 51253 | 11-8986-8609

	_	-					Test	Code:		51253 1	1-8986-860
Chronic Lar	val Fish Su	rvival and Grov	wth Test							Paci	fic EcoRis
Analysis ID:	19-5313-	5716 E	ndpoint: N	Mean Dry Biom	ass-mg		CET	IS Version	: CETISv1	.8.5	
Analyzed:	04 Apr-1	3 11:11 A	nalysis: F	Parametric-Cor	trol vs Trea	tments	Offic	cial Result	s: Yes		
Data Transfe	orm	Zeta	Alt Hy	p Trials	Seed		PMSD	NOEL	LOEL	TOEL	TU
Untransform	ed	NA	C > T	NA	NA		16.7%	100	>100	NA	1
Dunnett Mul	tiple Comp	arison Test									
Control	vs C-9	%	Test St	at Critical	MSD DF	P-Value	P-Type	Decision	n(α:5%)		
Lab Water C	ontrol 6.2	5	-0.819	2.41	0.118 6	0.9722	CDF		nificant Effec	t	
	12.		0.287	2.41	0.118 6	0.7354	CDF	•	nificant Effec		
	25		-0.701	2.41	0.118 6	0.9626	CDF	Non-Sign	nificant Effect	t	
	50		-3.06	2.41	0.118 6	1.0000	CDF		nificant Effec		
	100)	-3.37	2.41	0.118 6	1.0000	CDF	•	nificant Effect		
ANOVA Tabl	e					- ·- ·	-		······································		
Source	Sun	n Squares	Mean S	quare	DF	F Stat	P-Value	Decision	ι(α:5%)		
Between	0.11	61431	0.02322	2862	5	4.87	0.0054	Significa	nt Effect	•	
Error	0.08585501 0.004769722 18										
Total	0.20	19981			23						
Distribution	al Tests							······································			
Attribute	Tes	st		Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances	Bar	tlett Equality of	Variance	2.05	15.1	0.8424	Equal Var	iances		,	-
Distribution	Sha	apiro-Wilk W No	rmality	0.968	0.884	0.6119	Normal D	istribution			
Mean Dry Bi	omass-mg	Summary									
C-%	Control T	ype Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water	Contr 4	0.702	0.581	0.823	0.706	0.62	0.777	0.0379	10.8%	0.0%
6.25		4	0.742	0.61	0.874	0.743	0.641	0.84	0.0415	11.2%	-5.7%
12.5		4	0.688	0.595	0.781	0.675	0.632	0.77	0.0292	8.5%	1.99%
25		4	0.736	0.654	0.818	0.742	0.672	0.789	0.0257	6.99%	-4.88%
50		4	0.852	0.709	0.994	0.832	0.774	0.969	0.0448	10.5%	-21.3%
100		4	0.867	0.797	0.936	0.86	0.822	0.925	0.0218	5.02%	-23.4%
Graphics											
1.0			-			0.12					•
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Mean Dry Blomass-mg			lane de		2	E 0.04 -			Z		
8 0.5				Reject Null	Centered	E E E			•••		
Mean						5 0.00)	•		
									•		

-0.04

-0.12 -2.0

-1.5

-1.0

-0.5

0.0

0.5

1.0

1.5

0.2

0.0

6.25

12.5

C-%

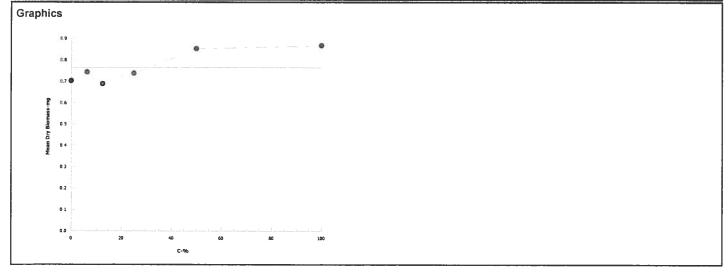
04 Apr-13 11:13 (p 1 of 1) 51253 | 11-8986-8609

Test Code:

Chronic Larva	Chronic Larval Fish Survival and Growth Test									
Analysis ID:	07-7141-6006	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.5					
Analyzed:	04 Apr-13 11:11	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes					

Linear	Interpola	tion Options					
X Trans	sform	Y Transform	Seed	d	Resamples	Exp 95% CL	Method
Linear		Linear	1281	705	200	Yes	Two-Point Interpolation
Point E	stimates	- -					
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL	
IC5	>100	N/A	N/A	<1	NA	NA	
IC10	>100	N/A	N/A	<1	NA	NA	
IC15	>100	N/A	N/A	<1	NA	NA	
IC20	>100	N/A	N/A	<1	NA	NA	
IC25	>100	N/A	N/A	<1	NA	NA	
IC40	>100	N/A	N/A	<1	NA	NA	
IC50	>100	N/A	N/A	<1	NA	NA	

Mean Dry	Mean Dry Biomass-mg Summary			Calculated Variate							
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect		
0	Lab Water Contr	4	0.702	0.62	0.777	0.0379	0.0759	10.8%	0.0%		
6.25		4	0.742	0.641	0.84	0.0415	0.083	11.2%	-5.7%		
12.5		4	0.688	0.632	0.77	0.0292	0.0584	8.5%	1.99%		
25		4	0.736	0.672	0.789	0.0257	0.0515	6.99%	-4.88%		
50		4	0.852	0.774	0.969	0.0448	0.0895	10.5%	-21.3%		
100		4	0.867	0.822	0.925	0.0218	0.0435	5.02%	-23.4%		



Client:	Leh	igh Permanent	e	Organism Log#:_	7154 Age:	248 hrs
Test Material:	<u> </u>	Pond 9		Organism Supplier:	Aquato	X
Test ID#:	51253	Project #:	20780	Control/Diluent:	EPAMH	I
Test Date:	3/26113	Rando	mization: <u>4.6.3</u>	Control Water Batch:	1581	

Treatment	Temp		Н	D.O.	(mg/L)	Conductivity		# Live C)rganisms		SIGN OFF
(%)	(°C)	new	old	new	old	(µs/cm)	A	В	С	D	SIGN-OFF
Lab Water	25.5	8.02	1.17	8.6	1.6	304	8	10	8	10	3.30·13
6.25	25.5	7.89	1.73	8.6	8.4	397	10	7	10	10	Sample ID 3143a
12.5	25.5	7.87	7.80	87	7.9	476	વ	10	10	9	Test Solution Prep
25	25.5	7.71	1.87	8.8	8.1	632	8	10	9	10	New WQ PH
50	25.9	7.60	8.03	9.1	8.1	915	10	10	9	٩	Renewal Time
100	25.5	7.48	8.20	10.1	7.9	1456	10	10	a	9	Renewal Signoff
Meter ID	30A	PHIS	pH16	RDG6	RD07	Ec07					DS Old WQ DS
Lab Water	25.7	8.10	7.72	8.7	7.0	299	8	10	8	10	3.3J.13
6.25	25.7	7.94	7.74	8.7	7.0	391	10	7	10	10	Sample ID 31432
12.5	25.7	7.86	7.75	8.7	6.8	480	9	10	10	9	Test Solution Fren
25	ลร.า	7.80	7.92	8.8	7.0	634	8	10	9	10	New WQ POUP
50	25.7	7.73	8.04	9.2	7.2	919	10	10	9	9	Renewal Time
100	25.7	7.66	8.13	10.4	7.2	1459	10	10	9	9	Renewal Signoff
Meter ID	30-A	PH19	pH15	PD04	F106	FC06					Old WQ LLO
Lab Water	25-8	8-21	7.89	8.8	7.8	298	8	10	8	70	Date: 4/1/13
6.25	25B	8.02	7.84	8.5	7.7	394	10	7	10	10	Sample ID: 31432
- 12.5	25.8	7.94	7.91	8-2	7.9	468	9	10	tÒ	9	Test Solution Prep
25	25.8	7-80	7.96	8-3	7.7	625	8	10	9	10	New WQ
50	25.8	7.73	8.10	8-5	7.7	913	10	10	9	9	Renewal Time
100	2518	7.66	8.20	8.7	8.0	1440	10	10	9	9	Renewal Signoff
Meter ID	30A	P415		12006	R006	Ee06					Old WO
Lab Water	25.3		7.84		7.2	315	8	10	8	10	Date: 4/2/13 Sample ID:
6.25	25.3		7.73		7.5	408	10	7	10	10	Sample ID
12.5	75.3		7.71		7.3	491	9	10	10	8	Termination Time:
25	25.3		7.70		7.2	660	8	10	9	10	Termination Signoff:
50	25.3		7.79		6.9	959	10	10	9		OIAWO RA
100	25.3		8.05		7.3	1502	10	10	9	9	
	30A		PH 16		RP04	EC07					

Client:	Lehi	gh Permanente	2	Organism Log#:	7154	Age:	448 hrs
Test Material:		Pond 9		Organism Supplier:	Agu	atox	
Test ID#:	51253	Project #:	20780	Control/Diluent:	V	EPAMH	
Test Date:	3/26/13	Randor	nization: <u>4.6.3</u>	Control Water Batch:	1581		

Treatment (%)	Temp		рН	D.O.	. (mg/L)	Conductivity		# Live (Organisms	<u> </u>	SIGN-OFF
	(°C)	new	old	new	old	(μs/cm)	A	В	С	D	Date
Lab Water	25.3	8.01		8.6		292	10	10	10	10	3/26/13
6.25	<i>25.3</i>	7.91		8.7		365	10	10	10	10	Sample ID:
12.5	25.3	7.71	4	8.9		587441	10	10	10	10	Test Solution Prep
25	25.3	7.71		8.9		587	10	10	10	10	New WQ OH
50	25.3	7.59		9.0		861	10	10	10	10	Initiation Time
100	25.3	7.46		10.1		1371	10	10	10	10	Initiation Signoff:
Meter ID	30A	PH18		RDOG		Eco6					
Lab Water	25.6	8.02	7.98	8.7	7.7	294	10	10	10	10	Date: 3.27.13
6.25	25.6	7.97	7.87	8.5	7.7	381	10	10	10	ιD	Sample ID: 31334/
12.5	25.6	7.92	7.80	8.5	7.2	456	9	10	10	01	Test Solution Prep
25	25.6	7.92	7.84	8-6	7.3	606	9	10	10	10	New WO FOUR
50	25.6	7.87	7,92	9.0	6.9	888	10	1D	9	10	Renewal Time: 1030
100	25.6	7.86	8.12	9.6	7.2	1398	10	10	10	10	Renewal Signoff
Meter ID	30A	PH15	PHIL	P007	RDOY	Eroy					old wo DIA
Lab Water	25.8	8.15	7.92	7.8	8.0	295	9	10	8	/0	Date: 3.28.13
6.25	25.8	8.04	7-85	8.2	7-1	379	10	9	10	10	Sample ID: 31378
12.5	25.8	7.95	783	8.2	7-8	460	9	10	10	9	Test Solution Prep
25	25.8	7-86	787	8.2	7-1	608	8	10	9	10	New WO
50	25.8	7.74	8.04	8-2	7-7-	889	/0	10	૧	10	Renewal Time
100	25.8	7.60	8.20	8.4	7-7	1400	10	10	9	9	Renewal Signoff:
Meter ID	3017	PH16	1415	PD07	MD004	Ecory					Öld WO
Lab Water	85.5	7,96	7.74	8.4	8-3	293	ઝ	10	8	10	Date: 3.29.13
6.25	25.9	7.99	7.78	0.5	8.1	334	10	8	10	10	Sample ID: 31378
12.5	25.9	7.84	7.80	8.6	8.0	409	9	ß	(0	9	Test Solution Prep:
25	25,9	3,39	1.93	8.74	8.2	612	8	10	9		New Wg
50	259	471	8.07	8.6	8.2	894	/0	10	9	10	Renewal Time
100	26.7	7.64	8-18	9.7	8.2	1402	10	10	9	ر ن م	Renewal Signoff:
Meter ID	26.4	PH 15	pH19	RDOT	2004	EWT					Old WO

Fathead Minnow Dry Weight Data Sheet

Client:	Lehigh Permanente	Test ID #:	51253	Project #	20780	
Sample:	Pond 9	Tare Weight Date:	3/31/13	Sign-off:	CA	
Test Date:	3 26 13	Final Weight Date:	4/3/13	Sign-off:	JLA	

Pan ID	Concentration Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water A	144.80	[5].00	c _i	6.62
2	В	172.72	180.49	16	0.78
3	С	163.51	170.07	10	0.66
4	D	/62.81	170.36	10	0.76
5	6.25 A	163.27	170.50	VO	٥.72
6	В	161.90	168.31	10	0.64
7	C	170.14	177.78	170	6.74
8	D	151.81	160.2	10	6.84
. 9	12.5 A	149.11	155.81	10	0.67
10	В	144.67	151.47	10	0.40
11	С	159.41	167.11	10	77.0
12	D	144.52	150.84	10	0.63
13	25 A	142.99	150.19	10	0.72
14	В	175.58	182.30	16	٥.٤٦
15	С	155.27	163.16	G	0.79
16	D	168.32	175.96	(6	0.76
17	50 A	/47.37	157.06	10	0.97
18	В	160.97	168.87	lo	0.79
19	С	169.11	176.85	16	0.77
20	D	175.09	183.82	10	0.87
21	100 A	145.41	154.10	10	0.87
22	В	160.70	169.95	16	093
23	С	150.62	158.84	Ιb	0.82
24	D	140.00	148.50	10	0.85
QA I		136.35	136.38		
QA 2		143.77	143.77		
QA3		146.65	146.68		
Balance 1D:		BALOI	BALO		

CETIS Analytical Report

Report Date:

04 Apr-13 11:13 (p 3 of 5)

Test Code: 51253 | 11-8986-8609

							rest	Code:		31233 1	1-8986-860
Chronic Lan	val Fish Survival	and Grow	th Test							Paci	fic EcoRis
Analysis ID: Analyzed:	11-2082-6583 04 Apr-13 11:1		•	Survival Rat				IS Version		1.8.5	
Data Transfo	orm	Zeta	Alt Hyp	Trials	Seed	 	PMSD	Test Res	ult		
Angular (Corr	rected)	NA	C > T	NA	NA		21.2%		d survival ra	ite	
Equal Variar	nce t Two-Sample	Test		•					-		
Control	vs Control		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	(a:5%)		
Lab Water Co	ontrol Hardness	Blank	-0.0488	1.94	0.258 6	0.5187	CDF		ificant Effec	t	
ANOVA Table	le										
Source	Sum Squa	ares	Mean Sq	uare	DF	F Stat	P-Value	Decision	(a:5%)		
Between	8.388313E		8.388313		1	0.00238	0.9627		ificant Effec	t	
Error	0.2114119)	0.035235	31	6			J			
Total	0.2114958	3			7						
Distributiona	al Tests										
Attribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances				1.27	47.5	0.8467	Equal Variances				
Distribution	Shapiro-V	Vilk W Nori	mality	0.82	0.645	0.0471	Normal D	istribution			·
d Survival F	Rate Summary										
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
)	Lab Water Contr		0.9	0.716	1	0.95	0.8	1	0.0577	12.8%	0.0%
)	Hardness Blank	4	0.9	0.675	1	0.95	0.7	1	0.0707	15.7%	0.0%
Angular (Cor	rrected) Transform	ned Sumn	nary								
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Cont		1.26	0.98	1.54	1.33	1.11	1.41	0.088	14.0%	0.0%
)	Hardness Blank	4	1.27	0.95	1.58	1.33	0.991	1.41	0.0994	15.7%	-0.51%
Graphics					-						
1.0						0.20					
0.9						0.15		1			•
								i i	••/	2 ⁷	
0.8						0.10					
				Reject Null	B:	0.05					
0.7 Te					ã.	0.00		الإحددد			
					3	ğ					
N N					Centered	-0.05					
d Survival R					8	L					
0.6 0.5 0.5 0.4 0.4 0.5 0.4 0.5 0.4 0.4 0.5 0.4 0.4 0.5 0.4 0.5 0.4 0.4 0.5 0.4 0.4 0.5 0.5 0.4 0.4 0.5 0.5 0.4 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5					.	-0.05 -0.10					
0.6 V4 0.5 0.5 0.4					.	-0.05	,•	•			
0.6 0.5 0.5 0.4 0.5 0.5 0.4 0.5 0.5 0.4 0.5 0.5 0.4 0.5 0.5 0.5 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5					See	-0.05 -0.10		•			
0.6 V Q SULLIFICATION O.6					ag.	-0.05 -0.10 -0.15	/ •	•			
0.6 0.5 0.5 0.4 0.3 0.3 0.2	0			,	ae S	-0.05 -0.10 -0.15 -0.20	-1.0	-05 0.0	0.5	1.0	15

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t Code: 51253 | 11-8986-

	Test Code: 51253 11-8986-860
Chronic Larval Fish Survival and Growth Test	Pacific EcoRisk
Analysis ID: 12-2484-4748 Endpoint: Mean Dry Biomass-mg Analyzed: 04 Apr-13 11:12 Analysis: Parametric-Two Sample	CETIS Version: CETISv1.8.5 Official Results: Yes
Data Transform Zeta Alt Hyp Trials Seed	PMSD Test Result
Untransformed NA C > T NA NA	13.0% Passes mean dry biomass-mg
Equal Variance t Two-Sample Test	
Control vs Control Test Stat Critical MSD DF P-V	Value P-Type Decision(α:5%)
Lab Water Control Hardness Blank -1.89 1.94 0.091 6 0.9	9464 CDF Non-Significant Effect
ANOVA Table	
Source Sum Squares Mean Square DF F S	Stat P-Value Decision(α:5%)
Between 0.01584198 0.01584198 1 3.5	9 0.1071 Non-Significant Effect
Error 0.02651191 0.004418652 6	
Total 0.04235389 7	
Distributional Tests	
Attribute Test Test Stat Critical P-V	Value Decision(α:1%)
Variances Variance Ratio F 1.87 47.5 0.6	6201 Equal Variances
Distribution Shapiro-Wilk W Normality 0.909 0.645 0.3	Normal Distribution
Mean Dry Biomass-mg Summary	
C-% Control Type Count Mean 95% LCL 95% UCL Me	edian Min Max Std Err CV% %Effect
0 Lab Water Contr 4 0.702 0.581 0.823 0.7	
0 Hardness Blank 4 0.791 0.703 0.879 0.7	766 0.729 0.864 0.0277 7.02% -12.7%
Graphics	
0.9	0.100
0.8	
0.	0.075
Reject Null 0.	0.850
0.5 p	
F 5	1.025
G 0.5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	1,000
₽ 0.	• •

-0.025

-0.050

-0.100 -1.5

-0.5

-1.0

0.0

0.5

1.5

1.0

Analyst: QA: QA:

0.3

0.1

Client:	Lehigh Permanente	_ Organism Log#:	7154 Age: 448 hrs
Test Material:	Hardness Control	Organism Supplier:	Aquatox
Test ID#:	5.12.53 Project #: 20780	Control/Diluent:	ЕРАМН
Test Date:	3/26113 Randomization: 4.7.3	Control Water Batch:	31337

Test Treatment	Тетр	- p	Н	D.O. (mg/L)	Conductivity		# Live O	rganisms		SIGN-OFF
	(°C)	new	old .	new	old	(µS/cm)	Α	В	С	D	
Hardness Control	25.4	7.67		8.8		2475	10	10	10	10	Date 3.26.\3 Test Solution Prep
											Initiation Time:
Meter ID	30A	PH18		R006		Eco6	New WO	ł.			Initiation Signoff
Hardness Control	25.6	8.68	8.58	8.8	6.0	2463	10	9	9	TD	Date 3.27.13 Test Solution Prep
											Renewal Time 12-15
Meter ID	30A	PHIS	PH16	P007	ROOY	£ 604	New WO		Old WQ	lf_	Renewal Signoff SVV
Hardness Control	25.9	8.66 8.58 PH	8.5%	9.7 OH	6.4	2456 2470 014	10	8	9	10	Date 3.28. 3 Test Solution Prepr
											Renewal Time
Meter ID	30A	P1416	81H9	RD07	RD06	E006	New WQ	f	اله wo	A	Renewal Signoff
Hardness Control	25.8	8.66	8.54	8.8	6,8	z 49 l	10	7	9	10	Date 3. a9. /3 Test Solution Prep
											Renewal Time 1245
Meter ID	30 A	PH 15	PHIS	ROOF	2007	BCOT	New WQ		Old WQ:	25	Renewal Signoff:
Hardness Control	ass	8.66	8.56	8.5	8.1	2493	10	7	9	10	3. 20. 13 Test Solution Prep
											Renewal Time 1030
Meter ID	301	HLZ	PHIG	B D06	PDOY	EC07	New WQ	V	Old WO	rus	Renewal Signoff:
Hardness Control	3577	8.57	8.45	8.9	6.1	2509	10	7	9	10	3.31.13 Test Solution Prep
											Renewal Time 1305
Meter ID	3019	PHI9	NAIS	poor	RDOG	tc06	New WO	UB.	Old WQ	-	Renewal Signoff:
Hardness Control	25.7	8.68	8 48 7 79	8.1	6.9	2495	10	7	9	10	Test Solution Prep
											Renewal Time /036
Meter ID	30A	0416	PNIS	PP07	0006	Ecoy	New WQ:	No	Old WQ:	чи	Renewal Signoff
Hardness Control	25.3		8-36		6.7	2525	10	7	9	10	Date 4/2//3 Termination Time 6820
Meter ID	80A		946		evoy	Bco7			Old WQ	u	Termination Signoff

Fathead Minnow Dry Weight Data Sheet

Client:	Lehigh Permanente	Test ID #: 51252	Project #	20780
Test Material:	Hardness Control	Tare Weight Date: 4/1/13	Sign-off:	CA
Test Date:	3/26/13	Final Weight Date: 43/13	Sign-off:	JUA

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
25		А	142.88	5 .52	(0)	7.84
24	Hardness	В	159.60	167.44	10	0.78
27	Control	С	156.68	163.97	10	0.73
28		D	146.34	154.21	Ø	0.79
XS-QA 5			BALUI	BALO		

Appendix L

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 13 Site Water to Fathead Minnows



04 Apr-13 10:21 (p 1 of 3) 51254 | 10-9624-4584

Chronic Larval Fish Survival and Growth Test Pacific EcoRisk Batch ID: 06-2096-9375 Test Type: Growth-Survival (7d) Analyst: Melinda Hooper Start Date: 26 Mar-13 15:30 Protocol: EPA-821-R-02-013 (2002) Diluent: Laboratory Water Pimephales promelas Not Applicable Ending Date: 02 Apr-13 08:20 Brine: Species: **Duration:** 6d 17h Source: Aquatox, AR Age: 1 Lehigh Permanente Sample ID: 18-4833-2657 Pond 13 Client: Code: 20780 Sample Date: 25 Mar-13 11:57 Material: Effluent Project: Receive Date: 25 Mar-13 15:30 Source: Lehigh Permanente Sample Age: 28h (9 °C) Station: Pond 13

Comparison S	Summary						
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
04-9970-2766	7d Survival Rate	0	>0		15.0%		Equal Variance t Two-Sample Test
09-3742-8177	7d Survival Rate	100	>100	NA	13.9%	1	Steel Many-One Rank Sum Test
12-7328-4775	Mean Dry Biomass-mg	<0	0		10.1%		Equal Variance t Two-Sample Test
18-7544-2316	Mean Dry Biomass-mg	50	100	70.71	12.0%	2	Dunnett Multiple Comparison Test
06-3759-4864	Mean Dry Weight-mg	0	>0		16.0%		Equal Variance t Two-Sample Test
15-5847-7969	Mean Dry Weight-mg	50	>50	NA	9.55%	2	Dunnett Multiple Comparison Test
Point Estimate	e Summary						
Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
11-9463-4293	Mean Dry Biomass-mg	IC5	3.39	1.17	112	29.51	Linear Interpolation (ICPIN)
		IC10	55.5	N/A	N/A	1.803	

Analysis ID	Endpoint	Level	%	95% LCL	95% UCL	TU	Method
11-9463-4293	Mean Dry Biomass-mg	IC5	3.39	1.17	112	29.51	Linear Interpolation (ICPIN)
		IC10	55.5	N/A	N/A	1.803	
		IC15	90.6	N/A	N/A	1.103	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	
03-5788-6635	Mean Dry Weight-mg	IC5	4.96	2.02	N/A	20.17	Linear Interpolation (ICPIN)
		IC10	>100	N/A	N/A	<1	
		IC15	>100	N/A	N/A	<1	
		IC20	>100	N/A	N/A	<1	
		IC25	>100	N/A	N/A	<1	
		IC40	>100	N/A	N/A	<1	
		IC50	>100	N/A	N/A	<1	

Analyst: QA

04 Apr-13 10:21 (p 2 of 3) 51254 | 10-9624-4584

							162	t Code:		31234 11	J-9624-4584
Chronic I	arval Fish Survival a	and Grow	th Test							Pacif	ic EcoRisk
7d Surviv	al Rate Summary						V1 220				
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.9	0.847	0.953	0.7	1	0.0707	0.141	15.7%	0.0%
0	Lab Water Contr	4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
6.25		4	0.925	0.906	0.944	0.9	1	0.025	0.05	5.41%	-2.78%
12.5		4	0.925	0.889	0.961	8.0	1	0.0479	0.0957	10.4%	-2.78%
25		4	0.95	0.928	0.972	0.9	1	0.0289	0.0577	6.08%	-5.56%
50		4	0.925	0.889	0.961	8.0	1	0.0479	0.0957	10.4%	-2.78%
100		4	0.825	0.789	0.861	0.7	0.9	0.0479	0.0957	11.6%	8.33%
Mean Dry	Biomass-mg Summ	ary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.791	0.77	0.812	0.729	0.864	0.0277	0.0555	7.02%	0.0%
0	Lab Water Contr	4	0.912	0.883	0.941	0.852	1.02	0.0387	0.0775	8.49%	-15.3%
6.25		4	0.762	0.759	0.765	0.752	0.77	0.00406	0.00812	1.07%	3.67%
12.5		4	0.833	0.821	0.846	0.795	0.869	0.0163	0.0326	3.92%	-5.37%
25		4	0.844	0.827	0.86	0.794	0.897	0.0216	0.0431	5.12%	-6.64%
50		4	0.873	0.845	0.902	0.795	0.98	0.0386	0.0772	8.84%	-10.4%
100		4	0.763	0.726	8.0	0.646	0.876	0.0495	0.0991	13.0%	3.51%
Mean Dry	Weight-mg Summar	у									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Hardness Blank	4	0.895	0.838	0.952	0.787	1.12	0.0766	0.153	17.1%	0.0%
0	Lab Water Contr	4	0.96	0.945	0.974	0.927	1.02	0.0194	0.0388	4.05%	-7.19%
6.25		4	0.825	0.811	0.84	0.767	0.856	0.0199	0.0398	4.82%	7.81%
12.5		4	0.907	0.878	0.936	0.82	0.994	0.0387	0.0773	8.53%	-1.29%
25		4	0.889	0.871	0.907	0.83	0.948	0.0242	0.0485	5.45%	0.67%
50		4	0.947	0.924	0.97	0.859	0.994	0.0304	0.0608	6.42%	-5.79%
100		4	0.927	0.895	0.96	0.808	1.01	0.0433	0.0865	9.33%	-3.57%

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Chronic I	Larval Fish Survival a	and Grow	th Test			Pacific Ed	oRisk
	/al Rate Detail			****			
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank		0.7	0.9	1		
0	Lab Water Contr		0.9	1	0.9		
6.25		1	0.9	0.9	0.9		
12.5		0.9	0.8	1	1		
25		1	0.9	1	0.9		
50		1	0.9	1	0.8		
100		8.0	0.9	0.9	0.7		
Mean Dry	Biomass-mg Detail	-					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	0.864	0.784	0.729	0.787		
0	Lab Water Contr	0.927	0.854	1.02	0.852		
6.25		0.767	0.759	0.77	0.752		
12.5		0.85	0.795	0.869	0.82		
25		0.83	0.853	0.897	0.794		
50		0.859	0.86	0.98	0.795		
100		0.804	0.727	0.876	0.646		
Mean Dry	Weight-mg Detail						
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	0.864	1.12	0.81	0.787		
0	Lab Water Contr	0.927	0.949	1.02	0.947		
6.25		0.767	0.843	0.856	0.836		
12.5		0.944	0.994	0.869	0.82		
25		0.83	0.948	0.897	0.882		
50		0.859	0.956	0.98	0.994		
100		1.01	0.808	0.973	0.923		
7d Surviv	al Rate Binomials				· ·		
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4		
0	Hardness Blank	10/10	7/10	9/10	10/10		
0	Lab Water Contr	10/10	9/10	10/10	9/10		
6.25		10/10	9/10	9/10	9/10		
12.5		9/10	8/10	10/10	10/10		
25		10/10	9/10	10/10	9/10		
50		10/10	9/10	10/10	8/10		
100		8/10	9/10	9/10	7/10		

Analyst: Analyst: QA:

04 Apr-13 10:21 (p 1 of 5)

Test Code:

51254 | 10-9624-4584

								lest				0-9624-458
Chronic Lar	val Fish Survival	and Grow	th Test								Paci	fic EcoRisk
Analysis ID:			dpoint: 7d			. Т			IS Version:	CETISv1	.8.5	
Analyzed:	04 Apr-13 10:1		alysis: No	nparametric-	Control	SI	realments		iai Results:	Yes		
Data Transfo		Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Angular (Cor	rected)	NA	C > T	NA ————	NA			13.9%	100	>100	NA	1
Steel Many-0	One Rank Sum Te	est										
Control	vs C-%		Test Stat	Critical	Ties	DF	P-Value	P-Type	Decision(α:5%)		
Lab Water Co	ontrol 6.25		16	10	3	6	0.6105	Asymp	Non-Signif	icant Effect		
	12.5		17	10	3	6	0.7334	Asymp	Non-Signif	ficant Effect		
	25		18	10	3	6	0.8333	Asymp	Non-Signif	icant Effect		
	50		17	10	3	6	0.7334	Asymp	Non-Signif	icant Effect		
	100		12	10	1	6	0.1424	Asymp	Non-Signif	icant Effect		
ANOVA Tabl	е							-				
Source	Sum Squa	ares	Mean Squ	are	DF		F Stat	P-Value	Decision(α:5%)		
Between	0.0910964	15	0.0182192	.9	5		1.32	0.3016	Non-Signif	icant Effect		
Error	0.2492934	ļ	0.0138496	3	18							
Total	0.3403898	3			23							
Distributiona	al Tests		· · · · · · · · · · · · · · · · · · ·									
Attribute	Test			Test Stat	Critical		P-Value	Decision(α:1%)			
Variances	Bartlett E	quality of \	/ariance	1.66	15.1		0.8939	Equal Var	iances			
Distribution	Shapiro-V	Vilk W Nor	mality	0.87	0.884		0.0053	Non-norm	al Distributio	n		
7d Survival F	Rate Summary											
7d Survival F C-%	Rate Summary Control Type	Count	Mean	95% LCL	95% U	CL	Median	Min	Max	Std Err	CV%	%Effect
	_		Mean 0.95	95% LCL 0.858	95% U	CL	Median 0.95	Min 0.9	Max 1	Std Err 0.0289	CV% 6.08%	%Effect
C-%	Control Type					CL_						
C-%	Control Type	r 4	0.95	0.858	1	CL_	0.95	0.9	1	0.0289	6.08%	0.0%
C-% 0 6.25	Control Type	r 4 4	0.95 0.925	0.858 0.845	1	CL_	0.95 0.9	0.9	1	0.0289 0.025	6.08% 5.41%	0.0% 2.63%
C-% 0 6.25 12.5	Control Type	4 4 4	0.95 0.925 0.925	0.858 0.845 0.773	1 1 1		0.95 0.9 0.95	0.9 0.9 0.8	1 1 1	0.0289 0.025 0.0479	6.08% 5.41% 10.4%	0.0% 2.63% 2.63%
C-% 0 6.25 12.5 25	Control Type	4 4 4	0.95 0.925 0.925 0.95	0.858 0.845 0.773 0.858	1 1 1		0.95 0.9 0.95 0.95	0.9 0.9 0.8 0.9	1 1 1	0.0289 0.025 0.0479 0.0289	6.08% 5.41% 10.4% 6.08%	0.0% 2.63% 2.63% 0.0%
C-% 0 6.25 12.5 25 50 100	Control Type	4 4 4 4 4	0.95 0.925 0.925 0.95 0.95 0.925 0.825	0.858 0.845 0.773 0.858 0.773	1 1 1 1		0.95 0.9 0.95 0.95 0.95	0.9 0.9 0.8 0.9	1 1 1 1	0.0289 0.025 0.0479 0.0289 0.0479	6.08% 5.41% 10.4% 6.08% 10.4%	0.0% 2.63% 2.63% 0.0% 2.63%
C-% 0 6.25 12.5 25 50 100	Control Type Lab Water Conti	4 4 4 4 4	0.95 0.925 0.925 0.95 0.95 0.925 0.825	0.858 0.845 0.773 0.858 0.773	1 1 1 1		0.95 0.9 0.95 0.95 0.95	0.9 0.9 0.8 0.9	1 1 1 1	0.0289 0.025 0.0479 0.0289 0.0479	6.08% 5.41% 10.4% 6.08% 10.4%	0.0% 2.63% 2.63% 0.0% 2.63%
C-% 0 6.25 12.5 25 50 100 Angular (Cor	Control Type Lab Water Conti	r 4 4 4 4 4 4 med Sumr	0.95 0.925 0.925 0.95 0.925 0.825	0.858 0.845 0.773 0.858 0.773 0.673	1 1 1 1 1 0.977		0.95 0.9 0.95 0.95 0.95 0.85	0.9 0.9 0.8 0.9 0.8 0.7	1 1 1 1 1 0.9	0.0289 0.025 0.0479 0.0289 0.0479 0.0479	6.08% 5.41% 10.4% 6.08% 10.4% 11.6%	0.0% 2.63% 2.63% 0.0% 2.63% 13.2%
C-% 0 6.25 12.5 25 50 100 Angular (Cor	Control Type Lab Water Control rected) Transfore Control Type	r 4 4 4 4 4 4 med Sumr	0.95 0.925 0.925 0.95 0.925 0.825 nary	0.858 0.845 0.773 0.858 0.773 0.673	1 1 1 1 1 0.977		0.95 0.9 0.95 0.95 0.95 0.85	0.9 0.9 0.8 0.9 0.8 0.7	1 1 1 1 1 0.9	0.0289 0.025 0.0479 0.0289 0.0479 0.0479	6.08% 5.41% 10.4% 6.08% 10.4% 11.6%	0.0% 2.63% 2.63% 0.0% 2.63% 13.2%
C-% 0 6.25 12.5 25 50 100 Angular (Cor C-% 0	Control Type Lab Water Control rected) Transfore Control Type	4 4 4 4 4 4 The Count 4	0.95 0.925 0.925 0.95 0.925 0.825 nary Mean 1.33	0.858 0.845 0.773 0.858 0.773 0.673 95% LCL	1 1 1 1 1 0.977 95% UC		0.95 0.9 0.95 0.95 0.95 0.85 Median	0.9 0.9 0.8 0.9 0.8 0.7 Min 1.25	1 1 1 1 1 0.9 Max 1.41	0.0289 0.025 0.0479 0.0289 0.0479 0.0479 Std Err 0.047	6.08% 5.41% 10.4% 6.08% 10.4% 11.6% CV% 7.07%	0.0% 2.63% 2.63% 0.0% 2.63% 13.2% %Effect 0.0%
C-% 0 6.25 12.5 25 50 100 Angular (Cor C-% 0 6.25	Control Type Lab Water Control rected) Transfore Control Type	7 4 4 4 4 4 4 med Sumr Count 4	0.95 0.925 0.925 0.95 0.925 0.825 mary Mean 1.33 1.29	0.858 0.845 0.773 0.858 0.773 0.673 95% LCL 1.18 1.16	1 1 1 1 1 0.977 95% UC 1.48 1.42	DL.	0.95 0.9 0.95 0.95 0.95 0.85 Median 1.33 1.25	0.9 0.9 0.8 0.9 0.8 0.7 Min 1.25 1.25	1 1 1 1 1 0.9 Max 1.41	0.0289 0.025 0.0479 0.0289 0.0479 0.0479 Std Err 0.047 0.0407	6.08% 5.41% 10.4% 6.08% 10.4% 11.6% CV% 7.07% 6.32%	0.0% 2.63% 2.63% 0.0% 2.63% 13.2% %Effect 0.0% 3.06%
C-% 0 6.25 12.5 25 50 100 Angular (Cor C-% 0 6.25 12.5	Control Type Lab Water Control rected) Transfore Control Type	7 4 4 4 4 4 4 med Sumr Count 4 4	0.95 0.925 0.925 0.95 0.925 0.825 mary Mean 1.33 1.29 1.3	0.858 0.845 0.773 0.858 0.773 0.673 95% LCL 1.18 1.16 1.06	1 1 1 1 1 0.977 95% UC 1.48 1.42 1.53		0.95 0.9 0.95 0.95 0.95 0.85 Median 1.33 1.25 1.33	0.9 0.9 0.8 0.9 0.8 0.7 Min 1.25 1.25 1.11	1 1 1 1 1 0.9 Max 1.41 1.41	0.0289 0.025 0.0479 0.0289 0.0479 0.0479 Std Err 0.047 0.0407 0.0735	6.08% 5.41% 10.4% 6.08% 10.4% 11.6% CV% 7.07% 6.32% 11.3%	0.0% 2.63% 0.0% 2.63% 13.2% %Effect 0.0% 3.06% 2.67%

Analyst: QA:

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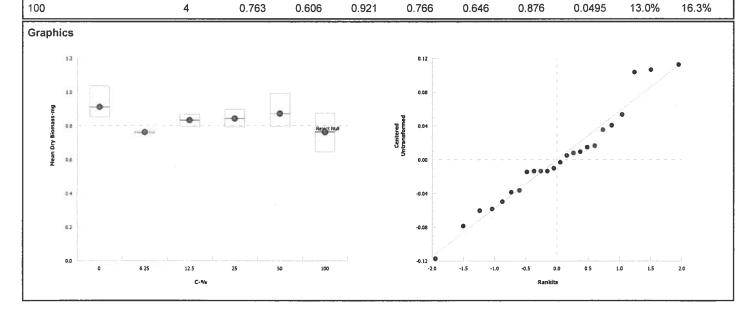
Chronic Larval Fish Survival and Growth Test Pacific EcoRisk Endpoint: 7d Survival Rate **CETIS Version:** Analysis ID: 09-3742-8177 CETISv1.8.5 04 Apr-13 10:17 Analyzed: Analysis: Nonparametric-Control vs Treatments Official Results: Yes Graphics 0.9 0.15 0.8 0.10 0.05 0.2 -0.15 0.1 6.25 12.5 C-% Rankits

04 Apr-13 10:21 (p 4 of 5) 51254 | 10-9624-4584

Test Code:

										oouc.			
Chronic Larval	Fisl	n Survival	and G	rowth Test								Pacif	ic EcoRis
		544-2316 Apr-13 10:2	1	•	Mean Dry Biom Parametric-Cor	_		tments		IS Version		1.8.5	
Data Transform	1		Zeta	Alt Hy	p Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed			NA	C > T	NA	NA			12.0%	50	100	70.71	2
Dunnett Multipl	le C	omparison	Test										
Control	vs	C-%		Test St	tat Critical	MSD	DF	P-Value	P-Type	Decision	n(a:5%)		
Lab Water Conti	rol	6.25*		3.31	2.41	0.109	6	0.0081	CDF	Significa	nt Effect		
		12.5		1.73	2.41	0.109	6	0.1612	CDF	Non-Sigr	nificant Effe	ct	
		25		1.51	2.41	0.109	6	0.2238	CDF	Non-Sigr	ificant Effe	ct	
		50		0.853	2.41	0.109	6	0.4881	CDF	Non-Sigr	ificant Effe	ct	
		100*		3.28	2.41	0.109	6	0.0086	CDF	Significa	nt Effect		
ANOVA Table													
Source		Sum Squa	ares	Mean S	Square	DF		F Stat	P-Value	Decision	n(a:5%)		
Between		0.0716822	.7	0.0143	3645	5		3.47	0.0226	Significa	nt Effect		
Error		0.0743163	2	0.0041	28684	18							
Total		0.1459986	5			23							
Distributional T	est	3											
Attribute		Test			Test Stat	Critica	al	P-Value	Decision	(a:1%)			
Variances Bartlett Equality of Variance					12.4	15.1		0.0294	Equal Var	iances			
Distribution	istribution Shapiro-Wilk W Normality					0.884		0.4469	Normal D	istribution			

Distribution	Shapiro-W	/ilk W Nor		0.96	0.884	0.4469	Normal I	Distribution			
Mean Dry Bi	omass-mg Summ	ary									
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab Water Contr	4	0.912	0.789	1.04	0.89	0.852	1.02	0.0387	8.49%	0.0%
6.25		4	0.762	0.749	0.775	0.763	0.752	0.77	0.00406	1.07%	16.5%
12.5		4	0.833	0.782	0.885	0.835	0.795	0.869	0.0163	3.92%	8.63%
25		4	0.844	0.775	0.912	0.842	0.794	0.897	0.0216	5.12%	7.54%
50		4	0.873	0.751	0.996	0.859	0.795	0.98	0.0386	8.84%	4.25%



CETIS Analytical Report

Report Date: Test Code: 04 Apr-13 10:22 (p 1 of 1)

51254 | 10-9624-4584

Chronic Larval Fish Survival and Growth Test

Analysis ID: 11-9463-4293 Endpoint: Mean Dry Biomass-mg
Analyzed: 04 Apr-13 10:21 Analysis: Linear Interpolation (ICPIN)

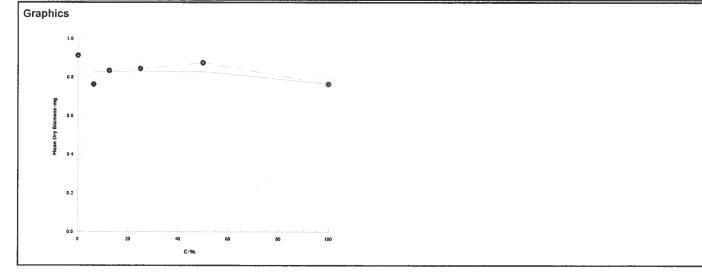
Pacific EcoRisk

CETIS Version: CETISv1.8.5

Official Results: Yes

Linear	Interpola	tion Options						
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method	
Linear		Linear	304	516	200	Yes	Two-Point Interpolation	
Point E	stimates	;						
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	3.39	1.17	112	29.51	0.8903	85.18		
IC10	55.5	N/A	N/A	1.803	NA	NA		
IC15	90.6	N/A	N/A	1.103	NA	NA		
IC20	>100	N/A	N/A	<1	NA	NA		
IC25	>100	N/A	N/A	<1	NA	NA		
IC40	>100	N/A	N/A	<1	NA	NA		
IC50	>100	N/A	N/A	<1	NA	NA		

Mean Dry	Biomass-mg Summ	nary	Calculated Variate							
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	0.912	0.852	1.02	0.0387	0.0775	8.49%	0.0%	
6.25		4	0.762	0.752	0.77	0.00406	0.00812	1.07%	16.5%	
12.5		4	0.833	0.795	0.869	0.0163	0.0326	3.92%	8.63%	
25		4	0.844	0.794	0.897	0.0216	0.0431	5.12%	7.54%	
50		4	0.873	0.795	0.98	0.0386	0.0772	8.84%	4.25%	
100		4	0.763	0.646	0.876	0.0495	0.0991	13.0%	16.3%	



Client:	Leh	igh Permanen	te	Organism Log#:	7154 Age: 248 hec.
Test Material:		Pond 13		Organism Supplier:	Aquatox
Test ID#:	51254	Project #:	20780	Control/Diluent:	ЕРАМН
Test Date:	3/26/13	Rando	mization: 4.6.2	Control Water Batch:	1581

		<u> </u>						5 8			<u> </u>
Treatment (%)	Temp (℃)	пеw	old	D.O. ((mg/L) old	Conductivity (µs/cm)	A	# Live O B	rganisms C	D	SIGN-OFF
Lab Water	25.5	8.0(7.96	8.6	8.1	363	10	10	10	9	Date: 3.30.13
6.25	25.5	8.04	7.92	8.5	8.1	372	10	9	9	9	Sample ID: 3,14 33
12.5	25.5	8.05	7.92	8.7	8.1	447	10	80	10	10	Test Solution Pres
25	25.5	8.05	7.95	88	8.0	556	10	o	10	GI	New WQ: VH
50	25.5	8.06	8.07	8.9	8.0	799	10	9	10	ଞ	Renewal Time:
100	25.5	8.05	8.10	10.1	8.0	1233	8	9	9	8	Renewal Signoff
Meter ID	36A	PHIS	RH19	R006	PDO Y	ECU7					Old WQ FOUR
Lab Water	25.7	8.02	7.91	8.7	8.3	301	10	10	10	9	Date: 3.31.13
6.25	25.7	7.96	7.87	8.7	8.2	379	10	9	9	9	Sample ID: 3/433
12.5	25.7	7.98	7.87	8.7	8.1	442	10	8	10	10	Test Solution (Tep
25	75.7	7.95	7.89	8.8	8.1	564	10	9	10	10	FOUS
50	25.7	7.94	7.96	9.4	8.1	805	10	9	10	8	Renewal Time:
100	76.7	7.97	8.01	10.7	8.0	1231	8	9	9	7	Renewal Signoff
Meter ID	30A	8419	PH19	PD04	PIOM	Eco6					FOUS
Lab Water	25.7	8-11	8.12	8.4	8.1	302	10	9	10	9	Date: 4/1/13
6.25	25.7	8.07	7.96	8.3	79	374	10	9	9	9	31433
12.5	25.7	8.07	7.93	8-4	7-8	448	10	8	10	10	Test Solution Prop
25	7577	8.08	7.93	8-6	7-8	575	10	9	10	10	New WQ
50	25.7	8.04	7.98	8-6	7-9	803	10	9	10	ક	Renewal Time:
100	25.7	8.00	8.11	8-6	7-9	1218	8	9	9	7	Renewal Signoff
Meter ID	3017	2n 15	PHIS	12006	MOB	FC06					old Wo
Lab Water	25.4		8.01		8.0	317	10	9	10	9	Date: 4/2/13
6.25	25.4		7.92		8.1	391	10	9	9	9	Sample ID:
12.5	25.4		7.87		7.9	468	9	8	10	10	Termination Time 0820
25	25.4		7.84		7.8	595	10	9	10	9	SVV
50	25.4		7.98		8.0	838	10	9	10	8	Old WQ: RA
100	25.4		8,00		8.0	1264	8	9	9	7	
Meter ID	30A		PH16		RD64	EC07					

Client:	Leh	igh Permanen	te	Organism Log#:	7154	A ge:	248 hrs.
Test Material:		Pond 13		Organism Supplier:		lauato	×
Test ID#:	51254	Project #:	20780	Control/Diluent:		ЕРАМН	
Test Date:	3/26/13	Rando	omization: 4.6.2	Control Water Batch:	1581		

Treatment	Temp	n	Н	D.O. (mg/L)	Conductivity		# Live C)rganisms		
(%)	(°C)	new	old	new	old	(µs/cm)	A	В	С	D	SIGN-OFF
Lab Water	25.5	9.01		8.1		297	10	10	10	10	3/2¢/13
6.25	25.5	8.01		8.2		375	10	10	10	10	Sample ID. ' 31335
12.5	25.5	8.02		8. 4		442	10	10	10	10	Test Solution Prep
25	25.5	8.01		8.5		580	10	10	10	10	New WQ
50	25.5	8.01		8.6		824	ID	10	10	10	Initiation Time: 1530
100	25.5	8.00		9.3		1272	10	10	10	10	Initiation Signoff
Meter ID	30A	PH15		ROOT IL		E004					
Lab Water	25.9	7.98	7.92	8.3	6.9	294	10	10	10	10	Date: 3.27.13
6.25	25.9	8.01	7.78	8.4	7.2	379	10	10	9	10	Sample 1D: 31335
12.5	25.9	8.02	7.78	8.5	7.3	443	10	9	10	10	Test Solution Prep
25	25.9	8.07	7.73	8.7	7.0	592	10	10	10	10	New WO. FOUS
50	25.9	8.04	7.92	8.8	7.2	825	10	10	10	10	Renewal Time
100	25.9	8.04	7.95	9.5	7.3	1275	10	10	10	10	Renewal Signoff
Meter ID	30A	PH 15	PH19	PD07	RD07	ECOM					Old WQ:
Lab Water	as.9	8.07	7.95	7.9	6,9	294	10	10	10	10	3.28.13
6.25	95.9	8.00	7.85	7.9	7.2	368	lo	0	9	10	Sample ID: 31379
12.5	25.9	8.00	7.90	7.9	7.5°	442	10	9	10	10	Test Solution Prep:
25	25.9	8.03	7.91	8.1	4.5	571	10	10	10	19	JUA New WOX
50	95.9	8.04	8.04	8.2	7.3	806	10	9	10	9	Renewal Time 10 36
100	25.9	8.03	8.09	8.5	7.5	1240	9	10	9	10	Renewal Signoff
Meter ID	30A	PH16	PHIG	P007	K007	Ecoy					Old WQ
Lab Water	25.4	7.96	7.87	8.7	8-2	8.70H	10	10	10	10	3.29.13
6.25	25.4	7.97	7.86	8.6	8.2	378	10	10	9	10	Sample ID: 3/379
12.5	25.51	8.00	7.90	8.8	8.1	452	0	8	10	10	Test Solution Prep
25	25.8	8.03	7.96	9.0	8.0	576	10	10	10	10	New WQ DH
50	25.8	8,08	8.07	4.2	8-1	333	10	9	10	8	Renewal Time
100	25.4	8.08	8.11	9.9	6-0	1279	\$	9	9	10	Renewal Signoff:
Meter ID	30A-	PHIS	PHIS	Roy	RD07	Ecos					old WO.

Fathead Minnow Dry Weight Data Sheet

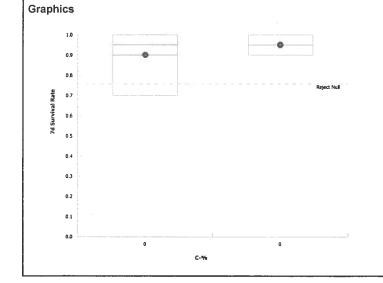
Client: _	Lehigh Permanente	Test ID #:_	51254	Project #	20780
Sample:	Pond 13	Tare Weight Date:	3/31/13	Sign-off:	CA
Test Date:	3/26/13	Final Weight Date:	4/3/13	Sign-off:	JUA

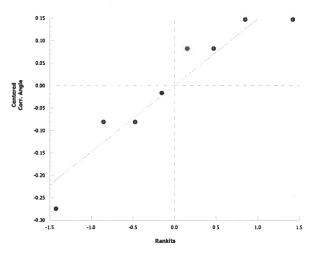
Pan 1D	Concentration Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
I	Lab Water A	440 177.46	186.73	10	0.93
2	В	151.68	160.22	10	0.85
3	С	158.04	168.20	10	1.02
4	D	179.95	188.47	10	0.85
5	6.25 A	144.93	152.60	10	0.77
6	В	158.96	166.55	٥١	6.76
7	С	160.68	168.38	D	רה
8	D	/32.8/	140.33	10	6 ج ٥٠
9	12.5 A	151.60	160.10	10	0.85
10	В	129.29	137.24	10	6.80
11	С	144.10	152.79	lo	0.87
12	D	150.07	158.27	VÖ	0.82
13	25 A	140.66	148.96	10	0.83
14	В	174.93	183.46	10	0.43
15	С	162.85	171.82	10	0.90
16	D	164.82	172.76	10	0.79
17	50 A	179.13	187.72	10	6.86
18	В		184.37	10	0.86
19	С	122.61	132.41	10	୦,୧୫
20	D	157.75	165.70	10	0.80
21	100 A	137.09	145.13	10	0.80
22	В	44 152.45	159.72	19	6.73
23	С	150.75	(59.5)	10	გ.მ
24	D	184.03	190.49	10	٥.45
QA 1		149.55	149.55		
QA 2		172.53	172.54		
QA3		148.59	148.63		
Balance 1D:		BALOI	BALOI		

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51254 | 10-9624-4584

								lest	Code:		51254	10-9624-4564
Chronic Lan	val Fis	h Survival a	and Gro	wth Test							Pac	ific EcoRisk
Analysis ID:	04-9	970-2766	E		l Survival Rat	_		CET	IS Version:	CETISv1	.8.5	
Analyzed:	04 /	\pr-13 10:1	7 #	Analysis: Pa	arametric-Two	Sample		Offic	ial Results	: Yes		
Data Transfo	orm		Zeta	Alt Hyp	Trials	Seed		PMSD	Test Resu	ılt		
Angular (Corr	rected)		NA	C > T	NA	NA		15.0%	Passes 70	d survival ra	te	
Equal Variar	nce t T	wo-Sample	Test									
Control	vs	Control		Test Sta	t Critical	MSD DF	P-Value	P-Type	Decision(α:5%)		
Lab Water Co	ontrol	Hardness	Blank	0.586	1.94	0.214 6	0.2895	CDF	Non-Signi	ficant Effec	t	
ANOVA Tabl	e											
Source		Sum Squa	ares	Mean So	juare	DF	F Stat	P-Value	Decision(a:5%)		
Between		0.0083133	54	0.008313	3354	1	0.344	0.5789	Non-Signi	ficant Effec	t	
Error		0.1450271		0.024171	118	6						
Total		0.1533404				7						
Distributiona	al Test	3										
Attribute		Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
Variances		Variance	Ratio F		4.46	47.5	0.2510	Equal Var	iances			
Distribution		Shapiro-V	Vilk W N	lormality	0.897	0.645	0.2717	Normal D	istribution			
7d Survival I	Rate S	ummary										
C-%	Cont	roi Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab \	Vater Contr	4	0.95	0.858	1	0.95	0.9	1	0.0289	6.08%	0.0%
0	Hard	ness Blank	4	0.9	0.675	1	0.95	0.7	1	0.0707	15.7%	5.26%
Angular (Co	rrected) Transforr	ned Sur	mmary								
C-%	Cont	rol Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab \	Vater Cont	4	1.33	1.18	1.48	1.33	1.25	1.41	0.047	7.07%	0.0%
0	Hard	ness Blank	4	1.27	0.95	1.58	1.33	0.991	1.41	0.0994	15.7%	4.85%



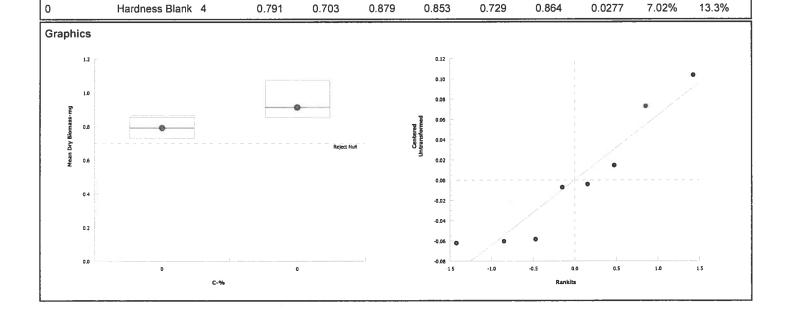


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0.0%

8.49%

Test Code: Pacific EcoRisk Chronic Larval Fish Survival and Growth Test CETISv1.8.5 Analysis ID: 12-7328-4775 Endpoint: Mean Dry Biomass-mg **CETIS Version:** Analysis: Parametric-Two Sample Official Results: Yes Analyzed: 04 Apr-13 10:21 **Test Result Data Transform** Zeta Alt Hyp **Trials** Seed **PMSD** C > T 10.1% Fails mean dry biomass-mg Untransformed NA NA NA **Equal Variance t Two-Sample Test** VS Control Test Stat Critical MSD DF P-Value P-Type Decision(a:5%) Lab Water Control Hardness Blank 6 0.0219 CDF Significant Effect 2.54 1.94 0.093 **ANOVA Table** P-Value Decision(a:5%) Source Mean Square DF F Stat **Sum Squares** Between 0.02940302 0.02940302 1 6.48 0.0438 Significant Effect 0.004540422 6 Error 0.02724253 7 Total 0.05664555 **Distributional Tests** Attribute Test Test Stat Critical P-Value Decision(a:1%) 47.5 0.5975 **Equal Variances** Variances Variance Ratio F 1.95 Distribution Shapiro-Wilk W Normality 0.886 0.645 0.2162 Normal Distribution Mean Dry Biomass-mg Summary CV% %Effect Min Max Std Err C-% **Control Type** Count 95% LCL 95% UCL Median Mean



1.04

0.853

0.852

1.02

0.0387

Analyst: QA:

0

Lab Water Contr 4

0.912

0.789

Client:	Lehigh Permanente	Organism Log#:_	7154 Age: 448 hrs
Test Material:	Hardness Control	Organism Supplier:	Aquatox
Test ID#:	.51254 Project #: 20780	Control/Diluent:	ЕРАМН
Test Date:	3/26113 Randomization: 4.7.3	Control Water Batch:	31337

Test Treatment	Temp (°C)	- p	old .	D.O. (mg/L) old	Conductivity (µS/cm)	# Live Organisms A B C D		SIGN-OFF		
Hardness Control	25.4	7.67		8.8		2475	10	10	10	10	3.26.13 Test Solution Prep
							Na WO				Initiation Time
Meter 1D	30A	8149		R006		Eco6	New WO	t			Initiation Signoff
Hardness Control	25.6	8.68	8.58	8.8	6.0	2463	10	9	9	10	Date 3.27.13 Test Solution Prep
											Renewal Time 1215
Meter ID	30A	PHIS	PH16	PD07	ROOY	E (04	New WQ	}	Old WQ	118	Renewal Signoff SVV
Hardness Control	25.9	8.66 8.58 DH	8.5%	9.7- DH	6.4	2456 2470	10	8	9	16	Date 3.28. 3
											Renewal Time
Meter ID	30A	P1416	PH18	RD07	RD06	E006	New WQ	f	o⊪wo J≀	∤	Renewal Signoff
Hardness Control	25.8	8.66	8.54	8.8	6,8	z 49 l	10	7	9	10	Date 3. a9. /3 Test Solution Prep
											Renewal Time 1245
Meter ID	30 A	PH15	PHIS	8007	2007	BCOT	New WQ		Old WQ		Renewal Signoff
Hardness Control	ગ્રદ	8.66	2-1	Ap.	8.1	2493	10	7	9	10	Date 3. 20. 13 Test Solution Prep
											Renewal Time 1030
Meter ID	30A	HIS	PHIG	B D06	PDOY	Eco7	New WO	V	Old WO	rus	Renewal Signoff
Hardness Control	2577	8.57	8.45	8.9	6.1	2509	10	7	9	10	Date 3.31.13 Test Splution Prep
											Renewal Time 1305
Meter ID	30A	PHIS	n415	POOM	RDOG	17 06	New WO	WZ	Old WQ	F	Renewal Signoff 4
Hardness Control	25.7	8.68	8 48 7 70	8.1	6.9	2495	10	7	9	10	Date 41113 Test Solution Prep
											Renewal Time /036
Meter ID	30A	0416	PNIS	1007	0006	Ecoy	New WQ:	μο	Old WQ	Уи	Renewal Signoff
Hardness Control	25.3		8-36		6.7	2525	10	7	9	10	Date 4/2/13 Termination Time
Meter ID	80A		Ph 16		1004	BCO7			Old WQ	14/	Termination Signoff

Fathead Minnow Dry Weight Data Sheet

Client: _	Lehigh Permanente	Test ID #: _	51252	Project #	20780
Test Material: _	Hardness Control	Tare Weight Date:	4/1/13	Sign-off:	C+
Test Date:	3 26 13	Final Weight Date:	43/13	Sign-off:	JUA

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
25		А	142.88	151.52	(0	7.86
24	Hardness Control	В	159.60	167.44	10	0.78
27		С	156.68	163.97	10	0.73
28		D	146.34	154.21	61	0.79
XS-QA 5			BALOI	BALO		

Appendix M

Test Data and Summary of Statistics for the Evaluation of the Chronic Toxicity of Lehigh Pond 14 Site Water to Fathead Minnows



04 Apr-13 10:25 (p 1 of 3) 51255 | 11-0413-1044

Chronic Larval Fish Survival and Growth Test Pacific EcoRisk Melinda Hooper Batch ID: 16-6874-8078 Test Type: Growth-Survival (7d) Analyst: Start Date: 26 Mar-13 16:00 EPA-821-R-02-013 (2002) Diluent: Laboratory Water Protocol: Ending Date: 02 Apr-13 08:50 Pimephales promelas Brine: Not Applicable Species: **Duration:** 6d 17h Source: Aquatox, AR Age: 1 Sample ID: 07-5521-2138 Code: Pond 14 Client: Lehigh Permanente Sample Date: 25 Mar-13 12:55 Material: Effluent Project: 20780 Receive Date: 25 Mar-13 15:30 Source: Lehigh Permanente Sample Age: 27h (13.7 °C) Station: Pond 14 **Comparison Summary** Analysis ID **Endpoint** NOEL LOEL **TOEL PMSD** TU Method Equal Variance t Two-Sample Test 7d Survival Rate 00-3872-4201 0 >0 11.9% 17-4372-2960 7d Survival Rate 100 >100 NA 10.0% 1 Steel Many-One Rank Sum Test 19-0695-8488 Mean Dry Biomass-mg 0 >0 9.8% Equal Variance t Two-Sample Test 01-3997-7158 Mean Dry Biomass-mg 100 >100 13.6% **Dunnett Multiple Comparison Test** NA 1 11-1850-8207 Mean Dry Weight-mg 0 >0 19.8% Equal Variance t Two-Sample Test 13-6000-9289 Mean Dry Weight-mg 100 >100 NA 18.2% **Dunnett Multiple Comparison Test** 1 **Point Estimate Summary** Analysis ID **Endpoint** Level % 95% LCL 95% UCL TU Method 14-3111-0159 Mean Dry Biomass-mg IC5 >100 N/A N/A <1 Linear Interpolation (ICPIN) IC10 >100 N/A N/A <1 IC15 >100 N/A N/A <1 IC20 >100 N/A N/A <1 IC25 >100 N/A N/A <1 IC40 >100 N/A N/A <1 IC50 >100 N/A N/A <1 05-9909-3943 Mean Dry Weight-mg IC5 >100 N/A N/A <1 Linear Interpolation (ICPIN) IC10 >100 N/A N/A <1 >100 IC15 N/A N/A <1 IC20 >100 N/A N/A <1 IC25 >100 N/A N/A <1 IC40 >100 N/A N/A <1 IC50 >100 N/A N/A <1

Analyst: QA:

04 Apr-13 10:25 (p 2 of 3) 51255 | 11-0413-1044

Chronic Larval Fish Survival and Growth Test Pacific EcoRisk 7d Survival Rate Summary C-% **Control Type** Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect 0 0.9 Hardness Blank 4 0.847 0.953 0.7 0.0707 0.141 1 15.7% 0.0% 0 Lab Water Contr 4 1 0 1 1 1 1 0 0.0% -11.1% 6.25 1 1 1 0 0 1 1 0.0% -11.1% 12.5 4 0.975 0.956 0.994 0.9 1 0.05 -8.33% 0.025 5.13% 25 4 0.9 0.847 0.953 0.7 1 0.0707 0.141 15.7% 0.0% 50 4 0.95 0.928 0.972 0.9 1 0.0289 0.0577 6.08% -5.56% 100 4 -11.1% 1 0 0.0% 1 1 1 0 1 Mean Dry Biomass-mg Summary C-% **Control Type** Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect 0 Hardness Blank 4 0.791 0.77 0.812 0.729 0.864 0.0277 0.0555 7.02% 0.0% 0 Lab Water Contr 4 0.808 0.785 0.75 0.83 0.889 0.0298 0.0596 7.38% -2.09% 6.25 4 0.776 0.744 0.809 0.702 0.901 0.0433 0.0866 11.2% 1.86% 12.5 4 0.839 0.828 0.85 0.807 0.877 0.0148 0.0296 3.52% -6.1% 25 4 0.852 0.812 0.892 0.754 0.987 0.0536 0.107 12.6% -7.74% 50 4 0.871 0.858 0.884 0.835 0.912 0.0181 0.0361 4.15% -10.1% 100 0.882 0.874 0.89 0.859 0.908 0.0101 0.0203 2.3% -11.5% Mean Dry Weight-mg Summary C-% **Control Type** Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect 0 Hardness Blank 0.895 0.838 0.952 0.787 1.12 0.0766 0.153 17.1% 0.0% 0 Lab Water Contr 4 0.808 0.785 0.83 0.75 0.889 0.0298 0.0596 7.38% 9.8%

Analyst:

0.0866

0.0755

0.153

0.0645

0.0203

11.2%

8.74%

15.9%

7.02%

2.3%

13.3%

3.53%

-7.28%

-2.68%

1.48%

0.0433

0.0378

0.0765

0.0322

0.0101

QAPA-

6.25

12.5

25

50

100

4

4

4

4

4

0.776

0.864

0.96

0.919

0.882

0.744

0.835

0.903

0.895

0.874

0.809

0.892

1.02

0.943

0.89

0.702

0.807

0.779

0.835

0.859

0.901

0.974

0.989

0.908

1.1

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Chronic L	arval Fish Survival a	and Grow	th Test			 Pacific EcoRisk
7d Surviv	al Rate Detail		LE .			
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	1	0.7	0.9	1	
0	Lab Water Contr	1	1	1	1	
6.25		1	1	1	1	
12.5		0.9	1	1	1	
25		1	0.7	0.9	1	
50		1	0.9	0.9	1	
100		1	1	1	1	
Mean Dry	Biomass-mg Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	0.864	0.784	0.729	0.787	
0	Lab Water Contr	0.75	0.889	0.81	0.781	
6.25		0.742	0.702	0.901	0.76	
12.5		0.877	0.828	0.845	0.807	
25		0.779	0.754	0.987	0.889	
50		0.912	0.847	0.89	0.835	
100		0.884	0.877	0.859	0.908	
Mean Dry	Weight-mg Detail					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	0.864	1.12	0.81	0.787	
0	Lab Water Contr	0.75	0.889	0.81	0.781	
6.25		0.742	0.702	0.901	0.76	
12.5		0.974	0.828	0.845	0.807	
25		0.779	1.08	1.1	0.889	
50		0.912	0.941	0.989	0.835	
100		0.884	0.877	0.859	0.908	
7d Surviv	al Rate Binomials					
C-%	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Hardness Blank	10/10	7/10	9/10	10/10	
0	Lab Water Contr	10/10	10/10	10/10	10/10	
6.25		10/10	10/10	10/10	10/10	
12.5		9/10	10/10	10/10	10/10	
25		10/10	7/10	9/10	10/10	
50		10/10	9/10	9/10	10/10	
100		10/10	10/10	10/10	10/10	

Analyst: QA: D

100

Report Date: Test Code: 04 Apr-13 10:26 (p 1 of 5) 51255 | 11-0413-1044

Chronic Larval Fish Survival and Growth Test Pacific EcoRisk Analysis ID: 17-4372-2960 7d Survival Rate **CETIS Version: CETISv1.8.5** Endpoint: Analyzed: 04 Apr-13 10:24 Analysis: Nonparametric-Control vs Treatments Official Results: Yes TOEL **PMSD** NOEL LOEL TU **Data Transform** Zeta Alt Hyp **Trials** Seed Angular (Corrected) NA C > TNA NA 10.0% 100 >100 NA 1 Steel Many-One Rank Sum Test Test Stat Critical Control C-% Ties DF P-Value P-Type Decision(a:5%) vs Lab Water Control 6.25 18 10 1 6 0.8333 Asymp Non-Significant Effect 12.5 16 10 1 6 0.6105 Asymp Non-Significant Effect 25 14 10 6 0.3451 Asymp Non-Significant Effect 1 50 14 10 1 6 0.3451 Asymp Non-Significant Effect 100 18 10 1 0.8333 Asymp Non-Significant Effect **ANOVA Table** Source **Sum Squares** Mean Square DF F Stat P-Value Decision(a:5%) Between 0.07046462 0.01409292 5 1.54 0.2278 Non-Significant Effect 18 Error 0.1649466 0.009163698 Total 0.2354112 23 **Distributional Tests Attribute** Test Stat Critical P-Value Decision(a:1%) **Test** Variances Mod Levene Equality of Variance 3.63 4.25 0.0190 **Equal Variances** 4.25 Variances 0.0011 Levene Equality of Variance 6.7 **Unequal Variances** 0.832 0.884 Distribution Shapiro-Wilk W Normality 0.0010 Non-normal Distribution 7d Survival Rate Summary C-% **Control Type** 95% UCL Median Min Max Std Err CV% %Effect Count Mean 95% LCL 0 Lab Water Contr 4 1 1 0 0.0% 0.0% 1 1 1 1 6.25 0 0.0% 4 1 1 1 1 1 1 0.0% 12.5 4 0.975 0.895 1 1 0.9 1 0.025 5.13% 2.5% 25 4 0.9 0.675 1 0.95 0.7 1 0.0707 15.7% 10.0% 50 4 0.95 0.858 0.9 0.0289 6.08% 5.0% 1 0.95 1 100 4 0.0% ۵ 0.0% 1 1 1 1 1 **Angular (Corrected) Transformed Summary** C-% **Control Type** Count Mean 95% LCL 95% UCL Median Min Max Std Err CV% %Effect 0 Lab Water Cont 4 1.41 1.41 1.41 1.41 1.41 1.41 0 0.0% 0.0% 6.25 4 1.41 1.41 1.41 1.41 1.41 1.41 0 0.0% 0.0% 12.5 4 1.37 1.24 1.5 1.41 1.25 1.41 0.0407 5.94% 2.89% 25 4 1.27 0.95 1.58 1.33 0.991 1.41 0.0994 15.7% 10.3% 50 4 1.33 1.18 1.48 1.33 1.25 1.41 0.047 7.07% 5.77%

Analyst: QA:

0.0%

0.0%

000-034-184-2 CETI\$85/2298.5.2

4

1.41

1.41

1.41

1.41

1.41

1.41

0

04 Apr-13 10:26 (p 2 of 5) 51255 | 11-0413-1044

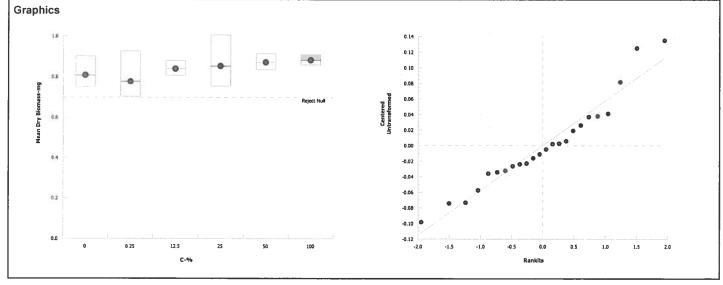
Chronic Larval Fish Survival and Growth Test Pacific EcoRisk 17-4372-2960 CETISv1.8.5 Analysis ID: Endpoint: 7d Survival Rate **CETIS Version:** Analyzed: 04 Apr-13 10:24 Analysis: Nonparametric-Control vs Treatments Official Results: Yes Graphics 1.0 0.15 0.10 8.0 0.7 0.00 0.6 -0.10 -0.15 0.3 -0.25 C-%

Analyst: QA

Report Date:

04 Apr-13 10:26 (p 4 of 5)

CETIS Alla	aryuc	ai Kepo	ort			Test Code: 51255 11-0413				1-0413-104			
Chronic Larva	al Fisi	h Survival a	and Gro	wth Test								Paci	fic EcoRisI
Analysis ID: Analyzed:		1997-7158 Apr-13 10:24		-	an Dry Biom ametric-Cor	_		tments		IS Version		1.8.5	
Data Transfor	rm		Zeta	Alt Hyp	Trials	Seed			PMSD	NOEL	LOEL	TOEL	TU
Untransformed	d		NA	C > T	NA	NA			13.6%	100	>100	NA	1
Dunnett Multi	iple C	omparison	Test										
Control	vs	C-%		Test Stat	Critical	MSD	DF	P-Value	P-Type	Decision	ι(α:5%)		
Lab Water Cor	ntrol	6.25		0.683	2.41	0.11	6	0.5660	CDF	Non-Sign	ificant Effec	t	
		12.5		-0.693	2.41	0.11	6	0.9618	CDF	-	ificant Effec		
		25		-0.977	2.41	0.11	6	0.9817	CDF	_	ificant Effec		
		50		-1.39	2.41	0.11	6	0.9942	CDF	Non-Sign	ificant Effec	t	
		100		-1.63	2.41	0.11	6	0.9972	CDF	Non-Sign	ificant Effec	t	
ANOVA Table)												
Source		Sum Squa	ares	Mean Squ	are	DF		F Stat	P-Value	Decision	(a:5%)		
Between		0.0318915	7	0.0063783	13	5		1.52	0.2327		ificant Effec	t	
Error		0.0754698	2	0.0041927	68	18							
Total		0.1073614				23		_					
Distributional	Tests	3											
Attribute		Test			Test Stat	Critica	al	P-Value	Decision((α:1%)			
Variances		Bartlett Ed	quality of	Variance	9.64	15.1		0.0861	Equal Var	iances		-	
Distribution		Shapiro-W	Vilk W No	ormality	0.947	0.884		0.2279	Normal Di	stribution			
Mean Dry Bio	mass	-mg Summ	ary										
C-%	Cont	roi Type	Count	Mean	95% LCL	95% L	ICL	Median	Min	Max	Std Err	CV%	%Effect
0	Lab V	Vater Contr	4	0.808	0.713	0.902		0.796	0.75	0.889	0.0298	7.38%	0.0%
6.25			4	0.776	0.638	0.914		0.751	0.702	0.901	0.0433	11.2%	3.87%
12.5			4	0.839	0.792	0.886		0.836	0.807	0.877	0.0148	3.52%	-3.93%
25			4	0.852	0.682	1.02		0.834	0.754	0.987	0.0536	12.6%	-5.54%
50			4	0.871	0.814	0.928		0.868	0.835	0.912	0.0181	4.15%	-7.86%
100			4	0.882	0.85	0.914		0.881	0.859	0.908	0.0101	2.3%	-9.23%
Granhiae													



CETIS Analytical Report

Report Date:

04 Apr-13 10:26 (p 1 of 1)

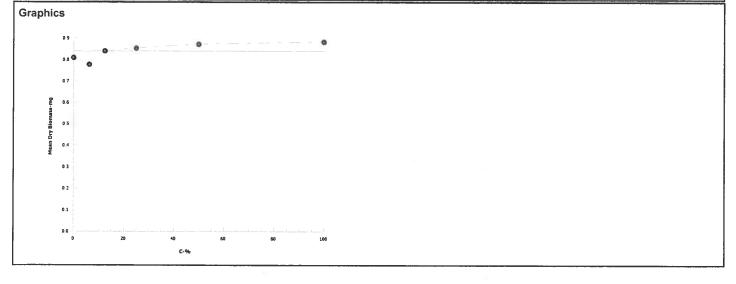
Test Code:

51255 | 11-0413-1044

Chronic Larva	al Fish Survival and	Growth Test			Р	acific EcoRisk
Analysis ID:	14-3111-0159	Endpoint:	Mean Dry Biomass-mg	CETIS Version:	CETISv1.8.5	
Analyzed:	04 Apr-13 10:24	Analysis:	Linear Interpolation (ICPIN)	Official Results:	Yes	

Linear	interpola	tion Options						
X Trans	sform	Y Transform	See	d	Resamples	Exp 95% CL	Method	
Linear		Linear	1626	619	200	Yes	Two-Point Interpolation	
Point E	stimates					··		
Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL		
IC5	>100	N/A	N/A	<1	NA	NA		
IC10	>100	N/A	N/A	<1	NA	NA		
IC15	>100	N/A	N/A	<1	NA	NA		
IC20	>100	N/A	N/A	<1	NA	NA		
IC25	>100	N/A	N/A	<1	NA	NA		
IC40	>100	N/A	N/A	<1	NA	NA		
IC50	>100	N/A	N/A	<1	NA	NA		

Mean Dry	/ Biomass-mg Summ	nary			С	alculated Va	riate			-
C-%	Control Type	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	
0	Lab Water Contr	4	0.808	0.75	0.889	0.0298	0.0596	7.38%	0.0%	
6.25		4	0.776	0.702	0.901	0.0433	0.0866	11.2%	3.87%	
12.5		4	0.839	0.807	0.877	0.0148	0.0296	3.52%	-3.93%	
25		4	0.852	0.754	0.987	0.0536	0.107	12.6%	-5.54%	
50		4	0.871	0.835	0.912	0.0181	0.0361	4.15%	-7.86%	
100		4	0.882	0.859	0.908	0.0101	0.0203	2.3%	-9.23%	



Analyst: QA:

7 Day Chronic Fathead Minnow Toxicity Test Data

Client:	Lehi	gh Permanent	<u></u>	Organism Log#: _	7154 Age: _	248hs
Test Material:		Pond 14		Organism Supplier:	Agrator	
Test 1D#:	51255	Project #:	20780	Control/Diluent:	ЕРАМН	
Test Date:	3/26/13	Randor	nization: 4./0 3	Control Water Batch:	1581	

Treatment	Temp	Р	Н	D.O.	(mg/L)	Conductivity		# Live (Organisms		SIGN-OFF
(%)	(°C)	new	old	new	old	(μs/cm)	A	В	С	D	
Lab Water	25.5	8.02	8.23	8.5	8.6	300	10	10	10	10	3.30.13
6.25	25.5	8.10	8-06	8.4	8.5	377	10	10	10	10	Sample ID 31434
12.5	25.5	8.12	8.00	8.5	8.6	443	9	10	10	10	Test Solution Prop
25	25.5	8.18	8.01	8.7	8.6	574	10	7	9	10	New WQ: VIL
50	25.5	8.22	8.06	9.0	8.7	819	10	9	9	10	Renewal Time
100	25.5	8.24	8.21	9.0	8.6	1243	10	16	10	10	Renewal Signoff
Meter ID	30A	PHIS	طالحام	R006	R007	E207					Old WQ DS
Lab Water	25.7	8.07	7.73	9.0	6.9	305	10	10	10	10	Date: 3.31.13
6.25	25.7	8.01	7.75	8.7	6.9	376	10	10	10	10	Sample ID: 31434
12.5	25.7	7.99	7.76	8.7	7.0	445	9	10	10	10	Test Solution Prep:
25	25.7	8.05	7.79	8.8	6.8	579	10	7	9	10	New WQ:
50	25.7	8.08	7.97	9.3	7.0	830	10	9	9	10	Renewal Time:
100	25.7	8.14	8.10	9.9	6.9	1273	10	10	10	10	Renewal Signoff:
Meter ID	30A	PHIO	pH15	PD04	K106	FCO6					Old WQ:
Lab Water	25.8	8.02	8.07	8-3	7.1	2.98	10	10	10	0	Date: 4/1/13
6.25	25.8	8.04	7.94	8.2	7.4	372	10	10	10	10	Sample ID:
12.5	25.8	8.09	7.90	8-1	7.6	443	9	10	10	10	Test Solution Prep
25	25.3	8-16	7.85	8.4	7.5	573	10	7	9	10	New WQ:
50	25.8	8.17	7.94	8-6	7.4	820	10	9	9	10	Renewal Time:
100	25.3	8-22	8.13	8-6	7.0	1246	10	10	10	10	Renewal State fi
Meter ID	30r	_	PH19	11006	R704	2.00					Old WQ: RA
Lab Water	25.7		7.73		6.3	313	10	10	10	10	Date: 4-2-13
6.25	25.7		7.66		Q.5	392	10	10	10	10	Sample ID:
12.5	25.7		7.67		6.1	464	9	10	10	10	Termination Time:
25	25.7		7.72		6.4	596	10	7	9		Termination Signoff:
50	25.7		7.85		6.6	861	10	9	9	10	old wo: RA
100	25.7		8.11		6.5	1320	10	10	10	10	
Meter ID	30A		PH15		RD07	ECOG					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client:	Le	high Permanent	e	Organism Log#:	715-4 Age:	_248hr
Test Material:		Pond 14		Organism Supplier:	Aquato	X
Test ID#:	51255	Project #:	20780	Control/Diluent:	EPAMI	H
Test Date:	3/26/13	Rando	mization: <u>U.L. 3</u>	Control Water Batch:	1581	

Treatment (%)	Temp (°C)	new	old	D.O. (mg/L)	Conductivity (µs/cm)	A	# Live C	Organisms C	р	SIGN-OFF
Lab Water	25.3	3,02		8.8		290	10	10	10	10	Date 3/24/13
6.25	25.3	8.04		8.8		363	10	10	10	10	Sample ID: 31334
12.5	75,3	3.06		8.8		427	10	10	10	10	Test Solution Prep:
25	25.3	3.11		9.5		560	10	10	10	10	New WQ DH
50	25,3	8.17		10.5		804	10	10	10	10	Initiation Time:
100	25.3	8.20		12.5		1245	10	10	10	6	Initiation Signoff
Meter ID	30A	PHIB		RDOL		Ecolo					
Lab Water	25.6	8.12	7.87	8.3	7.5	296	10	16	10	16	3.27.13
6.25	25.6	8-11	7.84	8.5	7.7	368	10	10	10	10	Sample ID: 31336
12.5	25.6	8.13	7.83	8.5	7.6	434	10	10	10	10	Test Solution Prep
25	25.6	214	7.90	8.5	7.7	569	10	10	10	10	New WQ FONB
50	25.6	8.15	9.09	8.8	7.9	817	10	10	10	10	Renewal Time:
100	25.6	8.16	3,18	9.0	7.5	1257	10	10	10	10	Renewal Signoff
Meter ID	30/4	PHIS	PHIL	P007	Rasy	EC04					old WQ: DH
Lab Water	25.9	6.23	7.86 UF	7.4	4.2	290	10	10	10	10	3.28.13
6.25	25.9	8.12	8.854	6.0	7.3	357	10	10	10	10	Sample ID 3 380
12.5	25.9	8.00	8.834	8.2	7.5	434	9	10	10	10	Test Solution Prep
25	25.9	807	9-80 W	8.4	7.3	562	10	10	9	10	New WO
50	25.9	8,07	8-9644	8.5	7.6	791	10	10	9	10	1030
100	25.9	8.65	8.7411	10.2	7.6	1242	10	10	10	(0	Renewal Signoff
Meter ID	300	PH16	PHIG	ROOT	2007	E606					
Lab Water	25.9	7.94	7.18	8.5	8.0	301	10	10	10	10	3.29.13
6.25	25.9	8.02	7.72	8.6	7.6	543	10	10	10	10	Sample ID 31380
12.5	25.9	8.05	7.81	9.6	7-6	445	9	10	10	10	Test Solution Prep
25	25.9	8.09	7.86	8.9	7.7	580	10	9	9	10	New Wo
50	25.9	8.10	8.00	9.1	7.7	823	10	10	9	10	Renewal Time:
100	25.9	8.09	8.18	10.3	7.8	1293	10	10	10	10	Renewal Signoff
Meter ID	30A	р415	PHIS	RDOZ	PD07	EC06					Old WQ RS

Fathead Minnow Dry Weight Data Sheet

Client:	Lehigh Permanente	Test ID #:	51255	Project # _	20780	
Sample:	Pond 14	Tare Weight Date:	3/31/13	Sign-off:	CA	
Test Date:	3-26-13	Final Weight Date:	4313	Sign-off:	JLA	

Pan ID	Concentration Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Lab Water A	/35. 22	142.72	10	0.75
2	В	/63.78	172.67	10	0.89
3	С	140.00	148.10	lo	0.81
4	D	179.24	187.05	lo	0.78
5	6.25 A	147.06	154.48	10	०७५
6	В	160.19	167.21	10	0.70
7	С	184.20	193.21	10	0.90
8	D	148. 45	156.05	lo	0.76
9	12.5 A	/83.59	192.36	(0	0.88
10	В	148.21	156.49	(0	0.83
- 11	С	177.57	86.02	10	0.85
12	D	158.22	166.29	10	0.81
13	25 A	161.34	169.13	10	0.78
14	В	169.60	177.14	(0	0.75
15	C	186.62	196.49	ιo	0.99
16	D	161.36	170.25	10	0.90
17	50 A	159.90	169.02	ю	0.91
18	В	192.23	200.70	w	0.85
19	С	164.74	173.64	10	6.89
20	D	/63.54	171.89	10	6.84
21	100 A	473.4379.38	188.22	10	0,88
22	В	-182.61 173.43	182.20		0.88
23	С	182.61	191.20	10	0.8(
24	D	181.33	190.41	10	0.91
QA I		182.42	182.61		
QA 2		176.49	176.51		
QA3		165.45	165.49		
Balance ID:		BALOI	BALOI		

Report Date:

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Test Code: 51255 | 11-0413-1044

							rest	Code:		51235 1	1-0413-104
Chronic Lar	val Fish Survival	and Grov	vth Test							Paci	fic EcoRis
Analysis ID:	00-3872-4201	Er	ndpoint: 7d	Survival Rat	е		CET	IS Version	CETISv1	.8.5	
nalyzed:	04 Apr-13 10:2	5 A r	nalysis: Pa	rametric-Two	Sample		Offic	cial Results	: Yes		
Data Transfe	orm	Zeta	Alt Hyp	Trials	Seed		PMSD	Test Res	ult		· ·
Ingular (Cor	rected)	NA	C > T	NA	NA		11.9%	Passes 7	d survival ra	ite	
qual Varia	nce t Two-Sample	Test									
Control	vs Control		Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	(α:5%)		
ab Water C	ontrol Hardness	Blank	1.47	1.94	0.193 6	0.0961	CDF	Non-Sign	ificant Effec	t	
NOVA Tab	le										
Source	Sum Squa	ares	Mean Sq	uare	DF	F Stat	P-Value	Decision	(α:5%)		
Between	0.0426071	6	0.042607	16	1	2.16	0.1922	Non-Sign	ificant Effec	t	
rror	0.1184677		0.019744	62	6						
otal	0.1610749	·			7	<u> </u>					
istribution	al Tests										
ttribute	Test			Test Stat	Critical	P-Value	Decision	(α:1%)			
/ariances	Mod Leve	ne Equal	ity of Varianc	e 5.13	13.7	0.0642	Equal Va	riances			
'ariances	Levene E			7.69	13.7	0.0323	Equal Va				
istribution	Shapiro-V	Vilk W No	rmality	0.791	0.645	0.0231	Normal D	istribution			
d Survival	Rate Summary										
:-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
)	Lab Water Contr	· 4	1	1	1	1	1	1	0	0.0%	0.0%
	Hardness Blank	4	0.9	0.675	1	1	0.7	1	0.0707	15.7%	10.0%
∖ngular (Co	rrected) Transfor	ned Sum	mary								
C-%	Control Type	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
)	Lab Water Cont	4	1.41	1.41	1.41	1.41	1.41	1.41	0	0.0%	0.0%
1	Hardness Blank	4	1.27	0.95	1.58	1.41	0.991	1.41	0.0994	15.7%	10.3%
Graphics											
1.0						0.15				• _	
						2 · 2 · 3 ·					
0.9						0.10					
0.8				Reject Null		0.05					
7d Survival Rate					7	§ 0.00		ا اوراهه • - -	·		
0.0					Centered	Ar. Ar					
SP 0.5					ū	රි -0.05					
						-0.10					
0.4						-0.15					
0.3											
0.2						-0.20					
0.1						-0.25					
0.0						-0.30					
•	0		0			-1.5	-1.0	-0.5 0.0	0.5	1.0	1.5
		C-%						Rankits			

Report Date:

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Test Code:

Chronic Larv	al Fish Survival and Grow	th Test		•					Paci	fic EcoRis
Analysis ID:	19-0695-8488 En	dpoint: Me	an Dry Biom	ass-ma		CET	S Version	: CETISv1	.8.5	
Analyzed:		*	rametric-Two	_			ial Results			
Data Transfo	-	Alt Hyp	Trials	Seed		PMSD	Test Res			
Untransforme		C > T	NA	NA		9.8%		nean dry bio	mass-ma	
≣qual Varian	ice t Two-Sample Test									
Control	vs Control	Test Stat	Critical	MSD DF	P-Value	P-Type	Decision	· · ·		
_ab Water Co	ontrol Hardness Blank	0.405	1.94	0.079 6	0.3497	CDF	Non-Sigr	ificant Effec	t	
ANOVA Table	e									
Source	Sum Squares	Mean Sq	uare	DF	F Stat	P-Value	Decision	ι(α:5%)		
Between	0.000544481	0.000544	481	1	0.164	0.6994	Non-Sigr	ificant Effec	t	
Error	0.01989489	0.003315	815	6						
Total	0.02043937			7						
Distributiona	I Tests									•
Attribute	Test		Test Stat	Critical	P-Value	Decision(α:1%)			
/ariances	Variance Ratio F		1.15	47.5	0.9093	Equal Var				
Distribution	Shapiro-Wilk W Nor	mality	0.894	0.645	0.2539	Normal Di	stribution			
Mean Dry Bio	omass-mg Summary									
C-%	Control Type Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
)	Lab Water Contr 4	0.808	0.713	0.902	0.786	0.75	0.889	0.0298	7.38%	0.0%
)	Hardness Blank 4	0.791	0.703	0.879	0.786	0.729	0.864	0.0277	7.02%	2.04%
			···				· · · · · · · · · · · · · · · · · · ·			
лар.поо										
0.9					0.10					
							1			
0.8	•	•			0.08		t 1		• ,	0.
0.7	•	•	Reject Null		0.08		1		• /	•
0.7	•	•	Reject Null	-	0.06		1 1 1 1 1		•	•
0.7	•	•	Reject Null	itered	0.06				•	•
0.7	•	- t	Reject Null	Centured	0.06 0.04 0.02			/_	•	6 .
0.7 5w5sework 0.6	•	•	Reject Null	Centered	0.06				•	•
0.7 Mean Dry Blomass-mg	•	•	Reject Null	Centured	0.06 0.04 0.02			/ _* •	•//	•
0.7 Nean Dry Biomass-mg	•	•	Reject Null	Centered	0.06 - 0.04 - 0.02 - 0.02 - 0.00		•	_	•//	•
0.7 Mean Dry Blomass-mg		•	Reject Null	Centered	0.06	······	•	,•	•//	•
0.7 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5		•	Reject Null	Centered	0.06 - 0.04 - 0.02 - 0.02 - 0.02 - 0.04 - 0.05 •	··········	•	/ _• •	•//	•
0.7 0.6 0.6 0.5 0.4 0.3		•	Reject Null	Centered	0.06 - 0.04 - 0.02 - 0.02 - 0.02 - 0.02 - 0.04 - 0.02 - 0.04 - 0.02 - 0.04 - 0.04 - 0.02 - 0.04 - 0.			, •	•	•

Analyst: QA: QA:

7 Day Chronic Fathead Minnow Toxicity Test Data

Client:	Lehigh Permanente	Organism Log#:	7154 Age: 248 hrs
Test Material:	Hardness Control	Organism Supplier:	Aquatox
Test ID#:	512 5 Project #: 20780	Control/Diluent:	ЕРАМН
Test Date:	8/26/13 Randomization: 4.7.3	Control Water Batch: _	31337

Test Treatment	Temp (°C)	- p	old .	D.O. (mg/L) old	Conductivity (µS/cm)	A	# Live C	rganisms C	D	SIGN-OFF
Hardness Control	25.4	7.67		8.8		2475	10	10	10	10	3.26.13 Test Solution Prep
Mater ID	3 0A	દમાક		K006		E 206	New W8 V				Initiation Time 1515 Initiation Signoff
Meter ID Hardness Control		8.68	8.58		6.0	2463	10	9	9	10	Date 3.27.13 Test Solution Prep
N. 15	30A	DUIS	PH16	P007	R064	F (04	New WQ		Old WQ	14	Renewal Time 12-15 Renewal Signoff SVV
Meter ID Hardness Control	25.9	8.66	8.5%	8.7	6.4	2456 2410	10	8	9	10	Date 3.28.13 Test Solution Prepy
Mara-ID	30A	PH P 14 16	PH18	R007	RD66	E006	New WQ	7	old Wo		Renewal Time
Meter ID Hardness Control	25.8	8.66	8.54	8.8	6,8	z 49 l	10	7	9	10	Date 3. a9. /3 Test Solution Prep
	30 A		-1116		loo 7		New WQ		Old WQ		Renewal Time 1245 Renewal Signoff: KP
Meter ID Hardness Control	255	8.66	8.56	8.S	8.1	2493	10	7	9	10	Date 3. 20. 13 Test Solution Prep /
	30 1	<i>21</i> %			PDOY		New WO		Old WO FE	ΠR	Renewal Time 1030
Meter ID Hardness Control	357)	8.57	7	8.9	6.1	Eco7 2509	10	7	9	_	Date 3.31.13 Test Splution Prep/
	3 <i>0</i> 19	กมด	Me	POOM			New WO		Old WQ		Renewal Time //305
Meter ID Hardness Control	25.7	PH19 8.68	8 48 1 70	8.1	6.9°	506 2495	10	7	9	10	Date 41113
			000				New WO		Old WQ		Renewal Time / 030 Renewal Signoff
Meter ID Hardness Control	30A Q5.3	9416	PN18	\$907	0006	Ecoy	10	7	9	10	Date 4/2/13 Termination Time
Meter ID	30A		8196		6-t	BCO7			Old WQ	14/	C S S S S S S S S S S S S S S S S S S S

Fathead Minnow Dry Weight Data Sheet

Client: _	Lehigh Permanente	Test ID #:	51252	Project #	20780
Test Material:	Hardness Control	Tare Weight Date: _	4/1/13	Sign-off:	CA
Test Date: _	3 26 13	Final Weight Date:	43/13	Sign-off:	JUA

Pan ID	Concentration	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
25		A	142.88	151.52	(0	7.86
24	Hardness	В	159.60	167.44	10	0.78
27	Control	С	156.68	163.97	10	0.73
28		D	146.34	154.21	Ö	0.79
XS-QA 3			BALOI	BALO		

Appendix N

Test Data and Summary of Statistics for the Evaluation of the Acute Toxicity of Lehigh Pond 13 Sediment to *Hyalella azteca*



CETIS Summary Report

Report Date:

10 Apr-13 18:17 (p 1 of 1)

Test Code: 51309 | 13-6791-9753

	0	41- 6	\	-4							Dooli	in Can Dial
Hyalella 10-d	Survival and G	rowth	sealment re	St 						<u> </u>	Paçıı	ic EcoRisk
Batch ID: Start Date: Ending Date: Duration:	07-7333-1290 30 Mar-13 09:4 : 09 Apr-13 9d 14h	10	Test Type: Protocol: Species: Source:	Survival-Growt EPA/600/R-99/ Hyalella azteca Chesapeake C	(064 (2000)		D B	nalyst: Piluent: Brine: Age:	Not /	on Briden Applicable Applicable		
Receive Date	06-0208-9296 : 25 Mar-13 11:5 e: 25 Mar-13 15:3 4d 22h (0.6°C	30	Code: Material: Source: Station:	Pond 13 Sediment Lehigh Perman Pond 13	ente			Client: Project:	Robe 2078	ertson Brya 80	n, Inc.	
Comparison	Summary											
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU	Meti	hod			
12-6700-5160	Mean Dry Wei	ght-mg	100	>100	NA	9.94%	1	Equ	al Vari	ance t Two	-Sample Te	est
19-4057-5122	Survival Rate		100	>100	NA	5.21%	1	Wilc	oxon F	Rank Sum	Гwo-Sampl	e Test
Mean Dry We	eight-mg Summa	ary										
C-%	Control Type	Cour	nt Mean	95% LCL	95% UCL	Min	Max	Std	Err	Std Dev	CV%	%Effect
0	Control Sed	8	0.223	0.213	0.232	0.187	0.263	0.00	878	0.0248	11.1%	0.0%
100		8	0.272	0.263	0.282	0.23	0.314	0.00	9	0.0255	9.36%	-22.1%
Survival Rate	Summary											
C-%	Control Type	Cour	nt Mean	95% LCL	95% UCL	Min	Max	Std	Err	Std Dev	CV%	%Effect
0	Control Sed	8	1	1	1	1	1	0		0	0.0%	0.0%
100		8	0.963	0.935	0.99	0.8	1	0.02	263	0.0744	7.73%	3.75%
Mean Dry We	eight-mg Detail											
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep	7	Rep 8		
0	Control Sed	0.263	0.218	0.24	0.245	0.208	0.187	0.20	4	0.217		
100		0.265	0.23	0.249	0.288	0.271	0.314	0.27	5	0.284		
Survival Rate	Detail											
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep	7	Rep 8		
0	Control Sed	1	1	1	1	1	1	1		1	_	
100		1	1	0.8	1	1	1	1		0.9		
Survival Rate	Binomials											
C-%	Control Type	Rep	1 Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep	7	Rep 8		
0	Control Sed	10/10								40/40		
0	Ochli or oca	10/10	, 10/10	10/10	10/10	10/10	10/10	10/1	U	10/10		

Report Date:

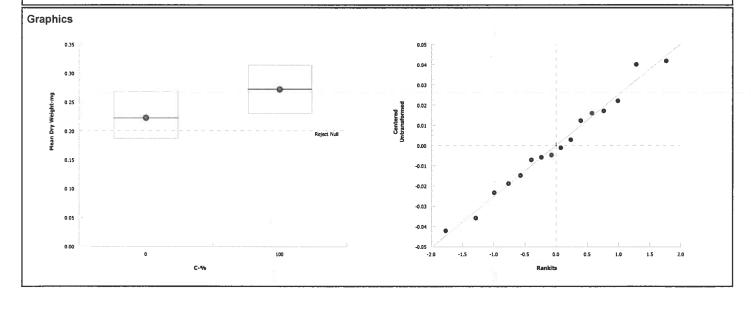
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Test Code: 51309 | 13-6791-9753

								1691	Coue.		31303 [1	3-0731-373
Hyalel	la 10-d	Survival and G	rowth Se	ediment Tes	t						Paci	fic EcoRisi
Analys Analyz		19-4057-5122 10 Apr-13 18:1			Survival Rate Nonparametric-	Two Sample	9		IS Version: cial Results		1.8.5	
Data T	ransfo	orm	Zeta	Alt Hy	p Trials	Seed		PMSD	Test Res	ult		
Angula	r (Corre	ected)	NA	C > T	NA	NA		5.21%	Passes s	urvival rate		
Wilcox	on Ra	nk Sum Two-Sa	mple Te	st								
Contro	ol	vs C-%		Test S	tat Critical	Ties DF	P-Value	P-Type	Decision	(a:5%)		
Contro	l Sed	100		60	NA	1 14	0.2333	Exact	Non-Sign	ificant Effec	t	
ANOV	A Table	Ð										
Source	e	Sum Squ	ares	Mean S	Square	DF	F Stat	P-Value	Decision	(a:5%)		
Betwee	en	0.013679	51	0.0136	7951	1	2.08	0.1714	Non-Sign	ificant Effec	t	
Error		0.092144		0.0065	81746	14						
Total		0.105824	<u> </u>			15						
Distrib	utiona	I Tests						-				
Attribu	ite	Test			Test Stat		P-Value	Decision				
Varian		Variance			5.19E+13		<0.0001	Unequal \				
Distribu	ution	Shapiro-	Wilk W N	Normality	0.669	0.841	<0.0001	Non-norm	nal Distributi	on		
Surviv	al Rate	e Summary										
C-%		Control Type	Count	t Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0		Control Sed	8	1	1	1	1	1	1	0	0.0%	0.0%
100			8	0.962	0.9	1	1	0.8	1	0.0263	7.73%	3.75%
Angula	ar (Cor	rected) Transfor	med Su	mmary								
C-%		Control Type	Count	t Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0		Control Sed	8	1.41	1.41	1.41	1.41	1.41	1.41	0	0.0%	0.0%
100			8	1.35	1.26	1.45	1.41	1.11	1.41	0.0406	8.48%	4.14%
Graphi	ics											
	1.0	•					0.15					
	0.9				•							
	-						0.10					
	0.8				10		0.05			• • • •	• •)
Rate	0.7					2	age .					
Survival Rate	0.6					Centered	₹ 0.00		0:-0: 0 :0-0†0)- 0 ;		
vi	0.5						-0.05					
	0.4											
	0.3						-0.10	•				
							-0.15					
	0.2				Reject Null		-0.70					
					Reject Null		-0.20		1			
	0.2	0			Reject Null	_	-0.20 -0.25	-1.5 -1.0	-0.5 0.0	0.5 1	.o 1.5	2.0

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													<u> </u>	
Hyalella 10-d	l Survi	ival and Gr	owth S	ediment	Test					-			Paci	fic EcoRisk
Analysis ID:		5700-5160		Endpoir		an Dry Weig	•			CETIS Version: CETISv1.8.5				
Analyzed:	10 /	Apr-13 18:1	7	Analysis	: Pa	rametric-Two	Sample			Offic	ial Results	s: Yes		
Data Transfo	rm		Zeta	Alt	Нур	Trials	Seed			PMSD	Test Res	ult		
Untransforme	ed		NA	C :	• T 🦎	NA	NA			9.94%	Passes n	nean dry wei	ght-mg	
Equal Varian	ice t T	wo-Sample	Test							,				
Control	vs	C-%		Te	st Stat	Critical	MSD [)F	P-Value	P-Type	Decision	ι(α:5%)		
Control Sed		100		-3.	92	1.76	0.022 1	14	0.9992	CDF	Non-Sign	ificant Effect	t	
ANOVA Table	е										-			
Source		Sum Squa	ares	Me	an Sq	uare	DF		F Stat	P-Value	Decision	ι(α:5%)		
Between		0.0097118	37	0.0	09711	837	1		15.4	0.0015	Significa	nt Effect		_
Error		0.0088539	28	0.0	00632	4234	14							
Total		0.0185657	7				15							
Distributiona	al Test	s												
Attribute		Test				Test Stat	Critical		P-Value	Decision	(α:1%)			
Variances		Variance	Ratio F			1.05	8.89		0.9488	Equal Var	iances			
Distribution		Shapiro-V	Vilk W	Normality		0.975	0.841		0.9174	Normal D	stribution			
Mean Dry We	eight-r	ng Summa	ry											
C-%	Cont	trol Type	Coun	t Me	an	95% LCL	95% UC	L	Median	Min	Max	Std Err	CV%	%Effect
0	Cont	rol Sed	8	0.2	23 🦷	0.202	0.244		0.218	0.187 -	0.263	0.00878	11.1%	0.0%
100			8	0.2	72	0.251	0.293		0.273	0.23	0.314	0.009	9.36%	-22.1%



10-Day Freshwater Sediment Toxicity Test Data

Client:	Lehigh Permanente	Project #:		Organism Supplier/Log Number:	nesopeake /	7165
Species:	Hyalella azteca	Test ID#:	51318 51309	Organism Age/Size:	11-12 day	5
				Control Water:	147	

Treatment =		Control	Sedimen	t		Pon		Sign-offs:	
Day 0			New D.O.	7.4			New D.O.	7.2	Initiation Time: 940
Date: 03.30.13			Meter ID	1907					WQ: MO
Temp. (°C) =23.4	A /O	B 10	C 10	D 10	A 10	B 10	c 10	D /O	Initiation Counts:
Feed: MA	E 10	F 10	G 10	H 10	E /0	F 10	G 10	H /0	Confirmation Counts:
Day 1	Old D.O.	7.0	New D.O.	7.6	Old D.O.	7.1	New D.O.	7:5	AM Change: FUB
Date: 3/31/13	Meter ID	RD06	Meter ID	R006					WQ: FOUB
Temp. ($^{\circ}$ C) = 23.3	A XO	B 0	c o	D		BO		D O	PM Change:
Feed:	E O	F O	G O	ΗО	E O	FO	G Q	н О	Mortality Counts: Feb8
Day 2	Old D.O.	6-6	New D.O.	7.6	Old D.O.	7.7	New D.O.	7-6	AM Change:
Date: 4-1-13	Meter ID	2006		14006					wo:Yu
Temp. (°C) = 23 .3	A D	B O	C	D 0	A 0	B 0	C 0	0	PM Change:
Feed: YM	E O	F O	G O	H 10	E O	FO	G O	H 40	Mortality Counts: 🕊
Day 3	Old D.O.	6.5	New D.O.	7.4	Old D.O.	6.3	New D.O.	7.8	AM Change: 🕊
Date: 4-2-13		2005	Meter ID	R 005					WQ: 1/1
Temp. (°C) = 23.4	A 0	B 6	c 6	D 09		BO	0	D 0	PM Change:
Feed: N	E 0	F 0	G Ø	н 6	E 0	F Ø	G O		Mortality Counts: Yn
Day'4	Old D.O.	4.8	New D.O.	6.5	Old D.O.	5.1	New D.O.	6.7	AM Change:
Date: 4-3-13	Meter ID	RDGG	Meter ID	R006					WQ: N4
Temp. (°C) = 13.3	A 0	в 0	0	D 0	A ()	B 0	^C 0		PM Change: 1/2
Feed:	Е 0	0	G O	H O	E ()	U	G O	H O	Mortality Counts:
Day 5	Old D.O.	5.6	New D.O.	4.4	Old D.O.	1.8	New D.O.	7.5	AM Change:
Date: 4-4-13	Meter ID	2003	Meter ID	RDOG					WQ: NL
Temp. (°C) = 23.4	^ <u>6</u>	^B 0	G O	0	^ 0	В О	<i>(</i>)	D 0	PM Change:
Feed: UU	E 0	· 0	0	" Q	E 0	0	0	H _O	Mortality Counts: N
Day 6	Old D.O.	8.7	New D.O.	8.9	Old D.O.	8.4	New D.O.	8.7	AM Change: 100
Date: 04.05.13	Meter ID	2005	Meter ID	ROOS		Ď			WQ: LLO
Temp. (°C) = 23.1	A D	^B O	G	D O	^ 0				PM Change:
Feed:	E 0			^H 0	^L D	0			Mortality Counts:
Day 7	Old D.O.	8.7	New D.O.	8.7	Old D.O.	49.68.	ૄ New D.O.	8.5	AM Change: P1+
Date: 4.6.13	A	RD07	-	R004	A A	R - I		D O	wo: DH
Temp. (°C) = 233	E 2	0	G O	D 0		D D	0		PM Change: <i>OH</i>
Feed: Out	E 0			0 2/	E 0	U	U	0	Mortality Counts: DH
Day 8	Old D.O.	8.4	New D.O.		Old D.O.		New D.O.		AM Change: MO
Date: 0407-13 Temp. (°C) =23.4	Meter ID	R007	Meter ID	LD07	A	B	C A	1000000000000000000000000000000000000	WQ: HOO PM Change:
	E O	<i>v</i>	G	H 0	^ <i>O</i>	-			Mortality Counts:
Day 9					01100		0		AM Change:
Date: 04.08-13	Old D.O. Meter ID	8.6	New D.O.	814	Old D.O.	~~~	New D.O.		
Temp. (°C) = 23.4	A Ø	LDO5	Meter ID .	12005	A A	В	° 0	D _a	PM Change: 2
	E O	F D	G	H O	EO			H 1)	PM Change: CE Mortality Counts:
Day 10		3.5			Old D.O.		G ()	(Termination
Date: 4-9-13	Meter ID) · Y			Counts: MK
	# Alive/Re				# Alive/Re	nlicate			WQ: 41
	A (0		C 10	D	A ID	D .	c 8	D	
	E 10	10	10	01 H	E 10	F 10	0	^В 10	
<u> 1</u>			10	10		10	10	7	

Hyalella azteca Weight Data Sheets

Pan	Concentration Replicate	Initial Weight. (mg)	Final Weight. (mg)	# organisms	Ave Weight (mg)
1	Control A	61.87	64.50	10	0.263
2	Sediment B	63.76	65.94	10	0.218
3	C	65.13	67.53	10	0.240
4	D	68.03	70.48	10	0.245
5	Е	63.73	65.81	lo	0.208
6	F	68.15	70.02	10	0.187
7	G	61.80	63.84	10	0.204
8	Н	67.14	69.31	10	0.217
9	Pond 13 A	60.15	62.80	10	0.265
10	В	67.20	69.50	lo	0.230
11	С	64.09	66.08	8	0.249
12	D	65-14	68.02	lo	0.288
13	Е	64.55	67.26	10	0.271
14	F	64.89	68.63	10	0.314
15	G	62.43	65.18	10	0.275
16	Н	63.80	66.36	9	0.284
QA1		64.95	64.95		_

Freshwater Sediment Test Water Quality Characteristics

Client:		Lehigh Permante	Spec	cies:	Hyallela azteca	
Test ID:	51309	Project #:	20780			

Initial Water Quality Characteristics for Overlying Water

Date: 3.30-13

Site	рН	D.O. (mg/L)	Conductivity (µS/cm)	Alkalinity	Hardness	Total Ammonia	
Control Sediment	8-11-8	7.4	423	53	148	<).00	
Pond 13	4.50	7.2	424	89	250	61.00	51309
Meter ID	ettle	2007	Ec04	DT#8	DT#08	DK380-0	
Sign-off	pHovo	AK2007	Bootino	MO	но	NO	

Final Water Quality Characteristics for Overlying Water

Date: <u>4-9-13</u>

Site	рН	D.O. (mg/L)	Conductivity (µS/cm)	Alkalinity	Hardness	Total Ammonia	
Control Sediment	8-10	8-5	472	60 J	143 /	21.00	
Pond 13	8.05	84	541	103 1	189 /	4.00	
Meter ID	Phis	1207	Ec07	DT#8	DT#08	103800	
Sign-off	yu	un	un	v d	V d	Vd	

Appendix O

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Selenastrum capricornutum



CETIS Summary Report

Report Date:

03 Apr-13 11:38 (p 1 of 1)

Test Code:

51303 | 11-7782-4722

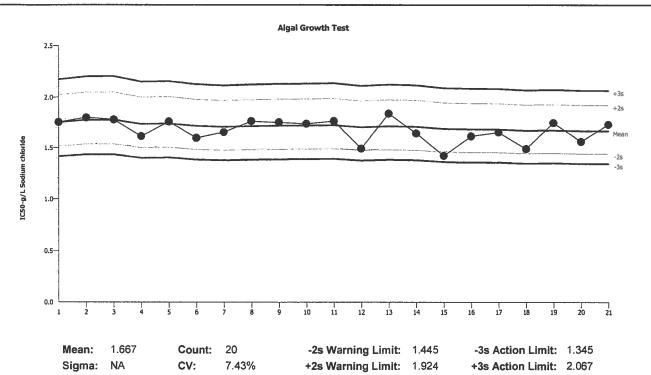
														1102 112
Algal Growth	Test												Pacifi	ic EcoRisk
Batch ID: Start Date: Ending Date: Duration:	18-5694-7088 26 Mar-13 12:30 30 Mar-13 12:15 96h	Pro Spe	t Type: tocol: ecies: urce:	EPA Sele	Growth A-821-R-02-(enastrum ca louse Cultur	pricornutum			Analy Diluer Brine Age:	nt: :	Laboi	Prosser ratory Wate pplicable	er	
-	15-9265-8792 26 Mar-13 12:30 26 Mar-13 12:30 NA (25.2 °C)	Sou	de: terial: urce: tion:	Refe	ium chloride erence Toxid louse				Client		Refer 2079	ence Toxic	ant	
Comparison S	Summary						9	-				-		
Analysis ID 07-9263-1606	Endpoint 96h Cell Density	-with EDT	NOEI A 0.25		LOEL 0.5	TOEL 0.3536	PMSD 8.98%	TU		Metho		ıltiple Com	parison Tes	st
Point Estimat														
Analysis ID	Endpoint		Leve	I	g/L	95% LCL	95% UCL	ΤU		Metho	od			
09-1472-6075	96h Cell Density	-with EDT	IC5 IC10 IC15 IC20 IC25 IC40 IC50		0.186 0.247 0.352 0.458 0.633 1.29 1.73	0.151 0.2 0.241 0.323 0.365 0.806 1.46	0.24 0.361 0.546 0.733 0.909 1.54 1.9			Linea	r Inter	polation (I	CPIN)	
96h Cell Dens	sity-with EDTA Si	ımmary							- 51					
C-g/L	Control Type	Count	Mear	1	95% LCL	95% UCL	Min	Max	(Std E	rr	Std Dev	CV%	%Effect
0 0.125 0.25 0.5 1	Lab Water Contr	4 4 4 4 4	3.91E 4.05E 3.57E 3.11E 2.65E 1.75E	+6 +6 +6 +6	3.85E+6 3.97E+6 3.53E+6 3.01E+6 2.55E+6 1.71E+6	3.97E+6 4.14E+6 3.62E+6 3.21E+6 2.75E+6 1.79E+6	3.71E+6 3.74E+6 3.41E+6 2.91E+6 2.28E+6 1.62E+6	4.29 3.70 3.51 2.92	9E+6 9E+6 9E+6 9E+6 9E+6 9E+6	8.51E 1.13E 6.07E 1.36E 1.36E 5.60E	+5 +4 +5 +5	1.70E+5 2.27E+5 1.21E+5 2.72E+5 2.72E+5 1.12E+5	4.35% 5.59% 3.39% 8.75% 10.2% 6.4%	0.0% -3.7% 8.55% 20.5% 32.1% 55.3%
96h Cell Dens	ity-with EDTA De	etail					··· ··- ··-							
C-g/L	Control Type	Rep 1	Rep	2	Rep 3	Rep 4								
0 0.125 0.25 0.5	Lab Water Contr	3.84E+6 4.07E+6 3.41E+6 3.03E+6 2.28E+6	4.00E 4.29E 3.70E 3.51E 2.76E	+6 +6 +6	3.71E+6 4.12E+6 3.57E+6 2.98E+6 2.92E+6	4.09E+6 3.74E+6 3.61E+6 2.91E+6 2.65E+6								
2		1.83E+6	1.62E	+6	1.69E+6	1.85E+6								

Analyst: 🔛 OA

Algal Growth Test All Matching Labs

Test Type: Cell Growth Organism: Selenastrum capricornutum (Green Material: Sodium chloride

Protocol: All Protocols Endpoint: 96h Cell Density-with EDTA Source: Reference Toxicant-REF



Quali	ty Con	trol Data	а									
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Sep	5	16:00	1.753	0.08614	0.7032			14-6115-8515	03-3227-0147	Pacific EcoRisk
2			6	15:45	1.8	0.1326	1.068			17-4047-6059	10-4768-8375	Pacific EcoRisk
3			11	13:35	1.779	0.1122	0.9092			21-0550-3671	09-8743-0715	Pacific EcoRisk
4			25	14:30	1.614	-0.0535	-0.4552			21-2264-2163	15-5594-3838	Pacific EcoRisk
5		Oct	9	13:50	1.759	0.09213	0.7508			19-6596-1224	15-9799-8081	Pacific EcoRisk
6			16	16:20	1.596	-0.07141	-0.611			13-8658-8288	12-9785-4112	Pacific EcoRisk
7		Nov	6	11:50	1.653	-0.01367	-0.1149			17-3179-2299	02-4916-4849	Pacific EcoRisk
8			21	15:50	1.763	0.09567	0.7788			21-1141-7186	16-3619-7547	Pacific EcoRisk
9		Dec	4	10:30	1.752	0.08448	0.6899			01-6270-2268	21-0519-9403	Pacific EcoRisk
10			11	15:00	1.738	0.07105	0.5825			02-9480-8478	13-6603-4421	Pacific EcoRisk
11			18	13:45	1.764	0.09724	0.7912			20-1735-8652	02-9000-5433	Pacific EcoRisk
12	2013	Jan	3	11:05	1.491	-0.1763	-1.56			01-3205-3944	15-5844-7633	Pacific EcoRisk
13			15	16:00	1.838	0.1711	1.364			18-1462-0180	03-3727-6668	Pacific EcoRisk
14			22	15:45	1.643	-0.02449	-0.2066			13-5357-3620	19-8484-3909	Pacific EcoRisk
15		Feb	5	12:20	1.42	-0.2467	-2.235	(-)		01-0678-7250	21-1038-2081	Pacific EcoRisk
16			12	15:15	1.613	-0.05369	-0.4569			12-7793-2153	14-8229-5619	Pacific EcoRisk
17			26	11:15	1.651	-0.01599	-0.1345			06-4757-0702	15-8535-5604	Pacific EcoRisk
18			27	16:00	1.488	-0.1791	-1.587			05-8096-0111	10-2315-9578	Pacific EcoRisk
19		Mar	12	14:20	1.747	0.07941	0.6494			07-5840-8392	10-3581-3748	Pacific EcoRisk
20			19	15:30	1.561	-0.1058	-0.9147			12-6730-8800	00-7931-8355	Pacific EcoRisk
21			26	12:30	1.731	0.06437	0.5287			11-7782-4722	09-1472-6075	Pacific EcoRisk

0.125

0.25

0.5

1

2

Meter 1D:

25.3

25.3

25.3

25.3

25.3

65A

GA12 1915

Selenastrum capricornutum Algal Toxicity Test Water Quality Data

	Client:	Reference Toxica	nt	Test ID #:51.	303	Test Date: _3/261/3
	Test Material:	NaCl		Project #: 20		rol/Diluent: Lab Water - No EDTA
	Reference Toxicant Test Treatment (g/L NaCl)	Temp (°C)	рН	D.O. (mg/L)	Conductivity (µS/cm)	Sign-Off
	Lab Water Control	25.2	7.50	9.0	84	Date: 3/26/13
	0.125	25.2	7.57	8.7	340	Test Solution Prep:
	0.25	25.2	7.52	3.6	564	New WQ: DH
	0.5	25.2	7.45	8.3	1066	Innoculation Time: 2:30
	1	25.2	7.41	8.7	1967	Innoculation Signoff:
	2	25.2	7.36	8.8	3880	ShelfID: (R3S)
	Meter ID:	65A	PH18	ROG	E(06	
	Lab Water Control	25,4	7.74			Date: 3/27/13
	0.125	25.4	7.61			wQ Time: 120.5
	0.25	25.4	7,59			WQ Signoff:
	0.5	25,4	7.55			
	I	25.4	7.54			
	2	25,4	7.50			
	Meter ID:	65A	0418			
	Lab Water Control	25.5	8.86			Date: 3/281/3
	0.125	25.5	8.91			WQ Time: 0945
	0.25	75.5	8.91			WQ Signoff: RA
	0.5	25.5	8.66			
	1	25.5	8.61			
	2	25.5	8.27			
	Meter ID:	G5A	BH18			
	Lab Water Control	25.4	9.77			Date: 3.29.13
	0.125	25.4	9.78			WQ Time: (100
L	0.25	25.4	9.68			WQ Signoff: OH
L	0.5	25.4	9.59			
L	1	25.4	9.45			
	2	25.4	9.16			
L	Meter ID:	65A	PH 19			
L	Lab Water Control	25.3	15.12	14.5	99	Date: 3-24-13
B	0.105					

Initial Test Conditions										
Target: 4.000 g NaCl in 2 L	1	Alkalinity	1,	Hardness	Light Intensity (ftc)					
Actual: 4.000 16	V	12	1	14	385.6					

10.29

10.04

4.94

9.92

9.62

PH 16

14.1

14.2

13.9

12.9

10.77

RDOG

351

575

1315

1791

3990

ECO4

Selenastrum capricornutum Cell Density Enumeration Data

Client:	Reference Toxicant	Initial Count:	10,000 cells/mL	
Test Material:	NaCl	Enumerating Scientist:	KP	
Test Start Date:	826113 Start Time: 12:30	Project #:	20790	
Test End Date: 2	8/30/13 End Time: 121S	Test ID #:	51303	

Treatment	Rep A	Rep B	Rep C	Rep D	Mean
Lab Water Control (No FDTA)	3.84 23	3.9956	3.7054	4.0919	3.9088
0.125	4.0645	4.286.2	4.1169	3.7443	4.0535
0.25	3.4128	237. 3.7039	3.5711	3.6099	3.5744
0.5	3.0316	3.5074	2.9804	2.9074	3.1068
1	S. 2800	2.7601	29187	2.6522	a.65a8
2	1.8326	1.6210	1.4861	1.8503	1.7475
This datasheet has been reviewed for completeness and consistency with	Control Mean Density (cells/mL x 10°)	% CV	Date:	Time:	Signoff:
Test Acceptability Criteria and/or other issues of concern.	3.91	4.35	3/30/13	16 18:10	A

Appendix P

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Ceriodaphnia dubia*



CETIS Summary Report

Report Date:

03 Apr-13 13:16 (p 1 of 2) 50907 | 14-2842-2070

Test Code:

Ceriodaphnia	Survival and Re	product	tion Test							Pacif	c EcoRisk
Batch ID:	16-8173-9391			Reproduction-S				Analyst:	Eddie Kalombo		
Start Date:	26 Mar-13 15:40		rotocol:	EPA-821-R-02-				Diluent:	Laboratory Wal	ter	
•	01 Apr-13 16:15 6d 1h		pecies: ource:	Ceriodaphnia d In-House Cultur				Brine:	Not Applicable		
Duration:	00 III	<u>ه</u>	ource:	m-nouse Cultur				Age:	·		
Sample ID:	18-9626-4658		ode:	NaCI				Client:	Pacific Ecorisk		
Sample Date:	26 Mar-13 15:40) M	laterial:	Sodium chloride	€			Project:	20631		
	: 26 Mar-13 15:40) S	ource:	Reference Toxi	cant						
Sample Age:	NA (25.3 °C)	S	tation:	In House							
Comparison S	Summary			-						· · · · · · · · · · · · · · · · · · ·	
Analysis ID	Endpoint		NOEL	LOEL	TOEL	PMSD	TU	Meti	nod		
17-4177-1599	Reproduction		<500	500	NA	20.4%		Stee	l Many-One Ran	k Sum Test	
02-4352-5325	Survival		2000	2500	2236	NA		Fish	er Exact/Bonferro	oni-Holm Te	st
Point Estimat	e Summary										
Analysis ID	Endpoint		Level	mg/L	95% LCL	95% UCL	TU	Meti	nod		
13-5367-1079	Reproduction		IC5	58	44.6	96.5		Line	ar Interpolation (I	ICPIN)	10
			IC10	116	89.3	193					
			IC15	174	134	290					
			IC20	232	179	386					
			IC25	290	223	483					
			IC40	464	357	1110					
			IC50	1080	446	1230					
20-9349-9564	Survival		EC50	2300	2200	2400		Trim	med Spearman-l	Kärber	
Reproduction	Summary										
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max			CV%	%Effect
0	Lab Water Contr		27.6	25.1	30.1	11	33	2.15		24.6%	0.0%
500		10	15.7	13	18.4	3	26	2.31	7.32	46.6%	43.1%
1000		10	15.1	12.5	17.7	10	29	2.18		45.6%	45.3%
1500		10	6.6	5.43	7.77	2	11	0.99		47.5%	76.1%
2000		10	1.5	0.813	2.19	0	6	0.58		123.0%	94.6%
2500		10	0	0	0	0	0	0	0		100.0%
Survival Sum	•										
C-mg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max			CV%	%Effect
0	Lab Water Contr		1	1	1	1	1	0	0	0.0%	0.0%
500		10	1	1	1	1	1	0	0	0.0%	0.0%
1000		10	1	1	1	1	1	0	0	0.0%	0.0%
1500		10	1	1	1	1	1	0	0	0.0%	0.0%
2000		10	1	1	1	1	1	0	0	0.0%	0.0%
2500		10	0.2	0.0426	0.357	0	1	0.13	3 0.422	211.0%	80.0%



CETIS Summary Report

Report Date: Test Code: 03 Apr-13 13:16 (p 2 of 2)

50907 | 14-2842-2070

							ies	t Code:		50907 1	4-2842-207
Ceriodaph	nia Survival and Re	production	on Test							Pacif	fic EcoRisk
Reproduct	ion Detail										
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	32	31	32	30	31	21	33	27	28	11
500		7	24	16	26	23	3	16	14	16	12
1000		12	10	11	10	22	23	29	12	12	10
1500		4	7	11	8	5	3	10	6	2	10
2000		6	2	1	0	2	0	2	2	0	0
2500		0	0	0	0	0	0	0	0	0	0
Survival De	etail	-									
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1	1	1	1
500		1	1	1	1	1	1	1	1	1	1
1000		1	1	1	1	1	1	1	1	1	1
1500		1	1	1	1	1	1	1	1	1	1
2000		1	1	1	1	1	1	1	1	1	1
2500		0	0	0	0	0	1	0	1	0	0
Survival Bi	inomials									*******	
C-mg/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1000		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
1500		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
2000		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
2500		0/1	0/1	0/1	0/1	0/1	1/1	0/1	1/1	0/1	0/1

Quality Control Data

12

12

19

26

5

12

19

26

Mar

12:00

15:40

14:10

12:15

15:15

14:05

13:30

15:40

2071

1957

1870

1811

1943

2071

2236

2299

74.93

-38.77

-126.2

-184.9

-53.67

74.63

239.9

303.1

0.4957

-0.2639

-0.8786

-1.308

-0.3666

0.4937

1.526

1.902

09 Apr-13 11:11 (1 of 1)

Ceriodaphnia Survival and Reproduction Test

All Matching Labs

Test Type: Reproduction-Survival (7d) Protocol: EPA-821-R-02-013 (2002)

Organism: Ceriodaphnia dubia (Water Flea)

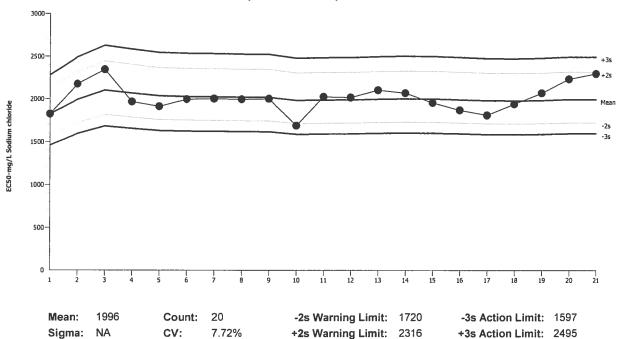
Endpoint: Survival

Material:

Sodium chloride

Reference Toxicant-REF Source:

Ceriodaphnia Survival and Reproduction Test



Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Nov	13	15:00	1825	-171.2	-1.206			04-6379-9430	02-1586-7783	Pacific EcoRisk
2			21	15:30	2175	179	1.155			16-1636-2487	17-1207-4863	Pacific EcoRisk
3		Dec	4	15:30	2346	349.4	2.17	(+)		15-1781-0501	08-2997-2394	Pacific EcoRisk
4			11	14:00	1968	-28.21	-0.1914			10-1738-2443	08-4676-2043	Pacific EcoRisk
5			18	14:15	1913	-83.48	-0.5747			03-5952-6156	01-2144-0634	Pacific EcoRisk
6	2013	Jan	8	13:00	1997	0.6433	0.004334			20-1200-1216	11-0260-9774	Pacific EcoRisk
7			9	14:45	2003	6.898	0.04641			14-9745-0187	19-7775-8810	Pacific EcoRisk
8			15	10:50	1997	0.6433	0.004334			07-7488-1743	14-9365-8269	Pacific EcoRisk
9			22	15:15	2003	6.898	0.04641			15-7654-1739	15-4987-6495	Pacific EcoRisk
10			26	14:10	1689	-307	-2.247	(-)		00-7568-3917	10-2163-6026	Pacific EcoRisk
11			31	15:15	2027	30.65	0.205			18-7973-8464	12-7801-4032	Pacific EcoRisk
12		Feb	5	10:15	2019	22.7	0.1521			01-4667-2275	21-0247-5235	Pacific EcoRisk
13			6	14:30	2105	109.2	0.7166			19-1583-2157	11-4763-7938	Pacific EcoRisk

04-7498-7624

19-7721-6115

13-1943-1556

10-1167-0551

09-3837-5563

04-4727-7668

04-9828-2202

14-2842-2070

15-7655-1951 Pacific EcoRisk

18-1461-9609 Pacific EcoRisk

13-8810-1909 Pacific EcoRisk

12-6808-7114 Pacific EcoRisk

03-3559-8495 Pacific EcoRisk

01-0846-3049 Pacific EcoRisk

20-9349-9564 Pacific EcoRisk

Pacific EcoRisk

10-2736-0550

14

15

16

17

18

19

20

21

CETIS QC Plot

Protocol: EPA-821-R-02-013 (2002)

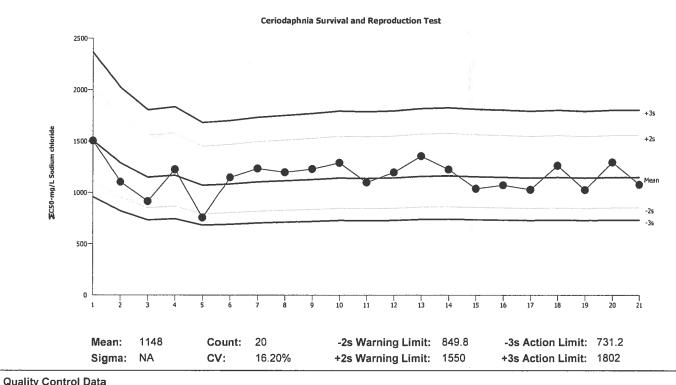
Report Date:

Reference Toxicant-REF

Source:

Ceriodaphnia Survival and Reproduction Test **All Matching Labs** Test Type: Reproduction-Survival (7d) Organism: Ceriodaphnia dubia (Water Flea) Material: Sodium chloride

Endpoint: Reproduction



Qualit	y Con	roi Data	1									
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID	Laboratory
1	2012	Nov	13	15:00	1505	357.1	1.801			04-6379-9430	19-0091-2117	Pacific EcoRisk
2			21	15:30	1104	-43.86	-0.2591			16-1636-2487	05-1770-2010	Pacific EcoRisk
3		Dec	4	15:30	915.6	-232.7	-1.507			15-1781-0501	18-7366-9308	Pacific EcoRisk
4			11	14:00	1226	77.41	0.4341			10-1738-2443	18-7017-9470	Pacific EcoRisk
5			18	14:15	755.4	-392.9	-2.786	(-)		03-5952-6156	13-7426-8041	Pacific EcoRisk
6	2013	Jan	8	13:00	1147	-1.352	-0.00783			20-1200-1216	16-8537-2679	Pacific EcoRisk
7			9	14:45	1234	85.83	0.4796			14-9745-0187	00-5993-9655	Pacific EcoRisk
8			15	10:50	1197	48.8	0.2769			07-7488-1743	15-5344-5440	Pacific EcoRisk
9			22	15:15	1229	80.74	0.4521			15-7654-1739	11-7332-0241	Pacific EcoRisk
10			26	14:10	1289	141.2	0.7717			00-7568-3917	07-2578-2163	Pacific EcoRisk
11			31	15:15	1098	-50.16	-0.2972			18-7973-8464	06-0639-2727	Pacific EcoRisk
12		Feb	5	10:15	1196	47.55	0.27			01-4667-2275	04-0830-0522	Pacific EcoRisk
13			6	14:30	1354	206.1	1.098			19-1583-2157	14-6779-9918	Pacific EcoRisk
14			12	12:00	1224	75.74	0.425			04-7498-7624	16-8536-7121	Pacific EcoRisk
15			12	15:40	1038	-110.3	-0.672			19-7721-6115	19-3278-2413	Pacific EcoRisk
16			19	14:10	1071	-76.83	-0.4608			13-1943-1556	04-3383-1924	Pacific EcoRisk
17			26	12:15	1028	-120.5	-0.7375			10-1167-0551	21-0104-4993	Pacific EcoRisk
18		Mar	5	15:15	1262	113.7	0.6284			09-3837-5563	07-4826-7068	Pacific EcoRisk
19			12	14:05	1024	-124.2	-0.7614			04-4727-7668	09-8763-3855	Pacific EcoRisk
20			19	13:30	1295	146.3	0.798			04-9828-2202	00-2995-4800	Pacific EcoRisk
21			26	15:40	1076	-71.79	-0.4295			14-2842-2070	13-5367-1079	Pacific EcoRisk

(Client: Reference Toxicant								laterial:			um Chl			Test Date: 3/26/13						
Pro	Project #: 20631		531	Test ID:50907					Randomization: 10.6.13							Control Water:			Modified EPAMH		
	Day	P New	H Old	D.O.		Conductivi New	ty (μS/cm) Old	Temp (*C)	A	В	С	Su	rvival / R E	eproduct F	ion G	Н	,		SIGN-	OFF	
	0	7.90	Olu	8.0	Old	346	Old	25.3	<u> </u>	0	0	0	0	0	0	0	0) J	Date:3/26/13 New W	rq: T	est Injt
	1	7.95	7.86		7.4	341	398	25.9	6	0	0	0) 0	0	0	0	0)	Date: 3/2 7/13 New W	COTLA COTLA	Counts Time 330
	2	7.98	8.02	7.9	7.4	339	411	75.9	0	0	0	0	0	0	0	0	0	0	Date 3 124/13 New W Sol'n Prep: 1 Old W	Q: JLA	Counts.
rol	3	8.00	8.12	8.6	8.2	353	422	25.6	٥	0	5	O	O	0	0	0	0	0	Date: 2 2 Slew W Sol'n Prep: Old W	Q: MO	Counts: S.S.
Lab Water Control	4	7.90	8.06	8.1	7.3	344	402	JSS	6	6	0	0	4	3	7	4	5	4	Date: 23913 Vew W Sol'n Prep: 20 Old W	10: KT	Counts. PQ
ab Wat	5	7.98	8.06	8.0	8.2	351	373	25.6	12	11	11	12	11	7	12	10	11	0	Date: \$31/13 New WQ: Co		Counts 20 Time (635
1	6	_	8.24		8.4	_	371	25.7	14	14	16	12	16	11	14	13	12	7		Date: 4/1/13New We: -	
	7																		Date: New W Sol'n Prep Old W	ζ.	Counts: Time:
	8																		Date: Old W	/Q:	Counts: Time
								Total=	32	31	32	30	31	21	33	27	28	1(Mean Neonates/Female =	27.	ما
	Day	P New	Old	D. New	O.	Conductivi	ty (µS/cm) Old		Α	В	C	Surviva D	l / Reprod	duction F	G	Н	I	J	RT BATCH	NUMBER	
300000	0	7.82		8.2		1281			0	0	0	O	0	0	0	0	0	0	92		
	1	7.89	7.93	8.6	7.6	1279	<i>(</i> 387		0	0	0	0	0	0	0	0	0	0	92		
	2	7.91	7.96	7.7	6.3	1315	1563		0	0	0	0	0	0	C	0	0	0	94		
	3	7.95	8.07	8.5	8.1	1374	1525		0	0	O	O	0	B	0	0	0	0	94		
500 mg/L	4	7.86	820	8.1	7.4	1352	14681		3	3	9	0	4	δ	4	6	5	6	94		
\$00	5	7.93	8.04	8.2	8.4	1395	1526		4	8	(0	0	8	0	10	8	11	0	94	94	
	6	_	846		8.1		1517		Ò	13	0	11	11	O	0	0	0	6	<u> </u>		
	7																				
	8																				
								Total≈	7	24	16	26	23	3	16	14	16	12	Mean Neonates/Female =	15.7	

(Client: Reference Toxicant						_ M	Material: Sodium Chloride							Test Date: 3/26/13				
Pro	ject#:	200	631		Test ID:		509	- F	Randomization: 10.6.13							Control	Water:	Modified EPAMH	
	Day		H		.0.	Conductivity (µS/cm) Temp				Survival / Reproduction									
		New	Old	New	Old	New	Old	(°C)	A	В	С	D	Е	F	G	Н	1	J	
	0	7.77		8.6		2248			0	0	0	0	0	0	0	0	0	0	
	1	7.87	7.96	8.9	7.8	2315	2547		0	0	ပ	0	0	0	0	0	0	0	
	2	7.83	7.94	7.6	6.4	219	2982		0	0	0	0	0	0	0	0	0	\bigcirc	
	3	7.91	8.13	8.7	8.2	2361	3120		0	0	0	0	0	0	0	0	0	O	
1000 mg/L	4	7.85	7-917	8.2	7.4	2320	2662		5	3	3	2	3	5	5	4	4	3	
1000	5	7.90	8.04	8.2	8.5	2284	ı		7	0	8	8	8	10	12	8	8	O	
	6	-	8.11	ĺ	8,1	_	2539		0	7	0	0	11	8	ia	0	0	7	
	7						·						1 1					•	
	8																		
								Total=	12	10	11	10	22	23	29	12	12	10	Mean Neonates/Female = 15.1
	Day	р	Н	D.	О.	Conductivi	ity (μS/cm)						l / Repro						The arrive of the second of th
		New	Old	New	Old	New	Old		Α	В	С	D	Е	F	G	Н	1	J	
	0	7.74		8.9		3190			0	0	0	0	0	0	0	0	0	0	
:	I	7.80	7.98	9.3	7.7 :	3280	3450		0	0	0	0	0	0	0	0	0	0	
ļ	2	7.81	7.93	7.8	7.2	3300	3770		0	0	0	0	٥	G	0	0	0	C	
	3	7.91	8.04	9.0	8.2	3760	3970		0	0	0	g	0	ව	G	0	0	0	
1500 mg/L	4	7.84	7.95	8:3	7.4	3300	7740		0	0	Ġ	0	0	300	2	2	7	2	
1500	5	7.88	8.04	8.5	8.4	3270	<u> </u>		4	6	5	8	2	0	8	4	0	8	
	6		8.09	~	8,1		3590		0	1	6	0	3	0	0	0	0	0	
	7		BICK				•								26. 5.	0			
	8		<u> </u>								e								
								Total=	ч	7	11	8	5	3	10	6	2	10	Mean Neonates/Female = 5.6° 6.6

(Client: Reference Toxicant								M									3/26/13	
Pro	Project #: 20631			Test ID: 50907					Randomization: 10.6.13 Control W							Water:	Modified EPAMH		
	Day	pН											eproduct						
	0	New	Ola	9.2	Old	New	Old		A	В	C	D	Е	F	G	Н		1	
	Ľ	7.72				4060			0	0	0	0	0	0	0	0	0	0	
	I	7.78	7.95	9.4	'	4130			0	0	0	0	0	0	0	0	0	0	
	2	7.80	7.97	7.9	7.0	4210	4630		0	0	\bigcirc	0	0	0	0	0	0	0	
	3	7.86	8.83	9.0	8.1	4120	5310		0	O	0	0	0	0	0	0	0	0	
2000 mg/L	4	7.82	792	4.8	7.4	4090	4870		0	a	0	Ю	9	C	0	a	0	0	
2000	5	7.85	8.04	8.6	8.3	4120	4570		ها	0		Ó	2	0	2	Ø	0	0	
	6	1	8.08)	8,1	_	4470		0	0	G	G	0	G	0	0	0	0	
	7																		
	8						-												
								Total=	9	2	l	0	7	0	ð	2	0	O	Mean Neonates/Female = 1.5
	Day		Н		.0.	Conductiv							/ Reprod						
		New	Old	New	Old	New	Old		A	В	С	D	Е	F	G	H	l -	1	
		7.7-0		9.6		4940			0	Ó	0	0	0	0	0	\mathcal{O}	0	<u></u>	
	l	7.75	7.98	10.1	7.7	5020	5230		%	Y/0	X/0	0	1/0	0	0	0	0	X/0	
	2	7.79	7.91	7.6	6.8	5120	5670		-	_	-	<i>کالا</i>	-	0	*/0	0	×/0	~	
	3	7.88	7.99	9.1	8-0	5100	5950		-	_	-	-	-	0	-	0	-		
2500 mg/L	4	7.79	7.90	8.8	7.5	4990	5830		-	-	_	•	-	0	-	0	-	-	
2500	5	7.84	8.03	8.7	8.4	5040	5640		_	1	-	Į	-	0	_	0	_	-	
	6	-	8.06	_	8.0	_	5460		_	_	~)	-	0	~	0	~	_	
	7								_	-	-	~	-		-			_	
	8								_		_		_		~		-	_	
								Total=	×/υ	×/υ	×/0	Mo	X/6	0	メル	0	410	×/0	Mean Neonates/Female = D

	Short-term Chronic 5-brood Certodaphina audia Survival & Reproduction Test Data														
Client: Reference Toxicant									Material:	Mete	r IDs	Test Date:	3/26/17	3	
Pro	Project #: _		20631 Test ID:				509	07				Control Water:	M	odified EPAM	IH
	Day	р			.0.		ty (μS/cm)							SIGN-OFF	
		New	Old	New	Old	New	Old	(°C)							
	0	PH15		RD07		EC07		30A					3/26/13	POLB	
	I	PH15	PH19	RD07	2207	Eco4	Ecoy	30A					3/27/13	New WQ:	Old WQ
	2	PH16	PHIS	P007	PD06	ELOY	EC07	30A					Date: 3/2913	New WQ:	DW PIO
	3	3H18	PH15	R1104	RD07	I=co8	Ec07	Ac					3/29/13	New WQ:	old wQ:
Meter IDs	4	PH12	pH5	RDOL	2006	EC07	Ecol	30A					3/30/13	New WQ:	Old WQ
Met	5	H15	PHA	F906	1		Ga	30 A					3/31/13	New WQ:	Old WQ
	6	1	PH15	ſ	RD06		Ecole						4/1/13	New WQ:	<i></i>
	7												Date:	New WQ:	Old WQ;
	8												Date:		Old WQ:

Appendix Q

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Fathead Minnow



Report Date:

04 Apr-13 10:34 (p 1 of 3) 51212 | 08-9032-1193

Test Code: 51212

Chronic Larva	l Fish Survival and Gr	owth Test						Pacific EcoRisk
Batch ID: Start Date: Ending Date: Duration:	08-6142-0965 26 Mar-13 17:00 02 Apr-13 08:30 6d 15h	Test Type: Protocol: Species: Source:	Growth-Surviv EPA-821-R-0 Pimephales p Aquatox, AR	2-013 (2002)			Analyst: Diluent: Brine: Age:	Melinda Hooper Laboratory Water Not Applicable 1
	09-5342-2797 26 Mar-13 17:00 26 Mar-13 17:00 NA (25.5 °C)	Code: Material: Source: Station:	NaCl Sodium chlori Reference To In House				Client: Project:	Pacific Ecorisk 20756
Comparison S	Summary		•					
Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Meti	hod
03-2364-9755 14-6480-3896 04-3076-3892	7d Survival Rate Mean Dry Biomass-mo Mean Dry Weight-mg	1.5 1.5 1.5	3 >1.5 >1.5	2.121 NA NA	12.2% 12.6% 15.5%		Dun	nett Multiple Comparison Test nett Multiple Comparison Test nett Multiple Comparison Test
Point Estimate	Summary							
Analysis ID	Endpoint	Level	g/L	95% LCL	95% UCL	TU	Met	hod .
21-4259-1882	7d Survival Rate	EC5 EC10 EC15 EC20 EC25 EC40	1.84 2.05 2.25 2.85	0.799 1.05 1.27 1.47 1.66 2.26 2.69	1.75 2.06 2.31 2.52 2.73 3.36 3.84		Line	ar Regression (MLE)
16-6380-5002	Mean Dry Biomass-mo	IC5 IC10 IC15 IC20 IC25 IC40 IC50	1.56 1.69 1.83 1.96 2.09 2.49 2.76	N/A 1.12 1.49 1.62 1.77 2.17 2.39	1.7 1.86 2.01 2.17 2.35 2.89 3.41		Line	ar Interpolation (ICPIN)
12-5246-9450	Mean Dry Weight-mg	IC5 IC10 IC15 IC20 IC25 IC40 IC50	1.84 2.19 2.53 2.87 4.03 6.39 6.82	0.891 1.51 1.79 1.96 1.65 5.32 6.24	3.44 4.38 5.12 6.15 7.31 6.83 7.19		Line	ar Interpolation (ICPIN)

Analyst: QA:

Report Date: Test Code: 04 Apr-13 10:34 (p 2 of 3) 51212 | 08-9032-1193

Control Type	Chronic La	arval Fish Survival a	and Grow	th Test							Pacif	ic EcoRisk
Control Type	7d Surviva	al Rate Summary										
0.75	C-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
1.5	0	Lab Water Contr	4	1	1	1	1	1	0	0	0.0%	0.0%
3	0.75		4	0.9	0.87	0.93	0.8	1		0.0816	9.07%	10.0%
Man	1.5		4	0.9	0.87	0.93	8.0	1	0.0408	0.0816	9.07%	10.0%
Man Dry Seminary	3		4	0.5	0.447	0.553	0.3	0.6	0.0707	0.141	28.3%	
Mean Dry Blomass-mg Summary C-g/L	6		4	0.2	0.147	0.253	0.1	0.4	0.0707	0.141	70.7%	80.0%
C-g/L ControlType Count Mean 95% LCL 95% UCL Min Max Std Err Std Dev CV% %Effect Control Type Count 4 0.764 0.734 0.793 0.663 0.836 0.0397 0.0795 0.04% 0.0% 0.0% 0.057 0.057 0.057 0.0637 0.823 0.0304 0.0607 7.86% 0.1.15% 0.1.15% 0.0% 0.067 0.823 0.0304 0.0607 7.86% 0.1.15% 0.056 0.0637 0.0437 0.0955 0.0411 0.511% 0.109 0.0839 0.0795 0.0408 0.0407 0.0955 0.0441 0.565 0.0933 0.0965 0.0411 0.511% 0.058 0.0933 0.0965 0.0411 0.511% 0.058 0.0933 0.0965 0.0411 0.045 0.0955 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0933 0.0665 0.0458 0.0938 0	9		4	0	0	0	0	0	0	0		100.0%
D Lab Water Contr 4	Mean Dry	Biomass-mg Summ	ary									
0.75	C-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
1.5	0	Lab Water Contr	4	0.764	0.734	0.793	0.653	0.836	0.0397	0.0795	10.4%	0.0%
3	0.75		4	0.772	0.75	0.795	0.697	0.823	0.0304	0.0607	7.86%	-1.15%
	1.5		4	0.747	0.732	0.763		0.803	0.0206	0.0411	5.51%	2.13%
	3		4	0.314	0.278	0.35	0.201	0.405	0.0477	0.0955	30.4%	58.9%
Mean Dry Weight-mg Summary Sum	6		4	0.109	0.0839	0.134		0.196	0.0333	0.0665	61.2%	85.8%
C-gil	9		4	0		0	0	0	0	0		100.0%
Lab Water Control 4	Mean Dry	Weight-mg Summai	у									
Control Type Rep 1 Rep 2 Rep 3 Rep 4 Rep 4 Rep 5 Rep 4 Rep 5 Rep 5 Rep 6 Rep 7 Rep 8 Rep 8 Rep 8 Rep 8 Rep 9 Rep 1 Rep 2 Rep 3 Rep 4 Rep 8 Rep 8 Rep 8 Rep 8 Rep 8 Rep 9 Rep 1 Rep 2 Rep 3 Rep 4 Rep 8 Rep 9 Rep 1 Rep 2 Rep 3 Rep 4 Rep 8 Rep 9 Rep 1 Rep 2 Rep 3 Rep 4 Rep 8 Rep 9 Rep 1 Rep 2 Rep 3 Rep 4 Rep 8 Rep 9 Rep 1 Rep 8 Rep 9 Rep 1 Rep 8 Rep 9 Rep 1 Rep 1 Rep 9 Rep 1 Rep 1	C-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
1.5	0	Lab Water Contr	4	0.764	0.734	0.793	0.653	0.836	0.0397	0.0795	10.4%	0.0%
1.5	0.75		4	0.861	0.833	0.89	0.749	0.914	0.0387	0.0775	9.0%	-12.8%
3	1.5		4				0.731	0.892	0.0369	0.0738	8.85%	-9.3%
6	3		4			0.696	0.45			0.148		
Rep	6								0.0473	0.0947	16.8%	
Ccy/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Control 1 1 1 1 0.755 1 0.9 0.9 0.8 1.5 0.9 0.9 0.8 1 3 0.5 0.3 0.6 0.6 6 0.1 0.1 0.2 0.4 9 0 0 0 0 Mean Dry Biomass-mg Detail Ccy/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.823 0.82 0.697 1.5 0.803 0.749 0.706 0.731 3 0.405 0.201 0.27 0.38 6 0.048 0.067 0.124 0.196 9 0 0 0 0 0 0 0 0 0	9											100.0%
Ccy/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Control 1 1 1 1 0.755 1 0.9 0.9 0.8 1.5 0.9 0.9 0.8 1 3 0.5 0.3 0.6 0.6 6 0.1 0.1 0.2 0.4 9 0 0 0 0 Mean Dry Biomass-mg Detail Ccy/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.823 0.82 0.697 1.5 0.803 0.749 0.706 0.731 3 0.405 0.201 0.27 0.38 6 0.048 0.067 0.124 0.196 9 0 0 0 0 0 0 0 0 0	7d Surviva	al Rate Detail										
Document Control Con			Rep 1	Rep 2	Rep 3	Rep 4						
0.75	0											
1.5		Lab Water Contr			•							
0.5												
	3											
C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4	6											
C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Control 0.653 0.836 0.763 0.802 0.75 0.749 0.823 0.82 0.697 1.5 0.803 0.749 0.706 0.731 3 0.405 0.201 0.27 0.38 6 0.048 0.067 0.124 0.196 9 0 0 0 0 Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	9		0	0	0	0						
0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.823 0.82 0.697 1.5 0.803 0.749 0.706 0.731 3 0.405 0.201 0.27 0.38 6 0.048 0.067 0.124 0.196 9 0 0 0 0 Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	Mean Dry	Biomass-mg Detail										
0.75	C-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4						
1.5	0	Lab Water Contr	0.653	0.836	0.763	0.802						
1.5	0.75		0.749	0.823	0.82	0.697						
0.405 0.201 0.27 0.38 0.048 0.067 0.124 0.196 0 0 0 0 Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	1.5											
0.048 0.067 0.124 0.196 9 0 0 0 0 Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	3											
9 0 0 0 0 0 Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	6											
Mean Dry Weight-mg Detail C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 D Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	9											
C-g/L Control Type Rep 1 Rep 2 Rep 3 Rep 4 0 Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49		Weight-mg Detail										
D Lab Water Contr 0.653 0.836 0.763 0.802 0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	•		Rep 1	Ren 2	Rep 3	Ren 4						
0.75 0.749 0.914 0.911 0.871 1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49	0											
1.5 0.892 0.832 0.882 0.731 3 0.81 0.67 0.45 0.633 6 0.48 0.67 0.62 0.49		Lab vvater Colli										
0.81 0.67 0.45 0.633 0.48 0.67 0.62 0.49												
0.48 0.67 0.62 0.49												
	3											
9 0 0 0 0	6											
	9		0	0	0	0						

Analyst: QA: W

CETIS Summary Report

Report Date: Test Code: 04 Apr-13 10:34 (p 3 of 3) 51212 | 08-9032-1193

Chronic L	arval Fish Survival a	nd Grow		Pacific EcoRisk		
7d Surviv	al Rate Binomials					
C-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	
0	Lab Water Contr	10/10	10/10	10/10	10/10	
0.75		10/10	9/10	9/10	8/10	
1.5		9/10	9/10	8/10	10/10	
3		5/10	3/10	6/10	6/10	
6		1/10	1/10	2/10	4/10	
9		0/10	0/10	0/10	0/10	

Analyst: QA: W

Report Date:

Chronic Larval Fish Survival and Growth Test

Pacific EcoRisk

Test Type: Growth-Survival (7d) Protocol: EPA-821-R-02-013 (2002) Organism: Pimephales promelas (Fathead Minn

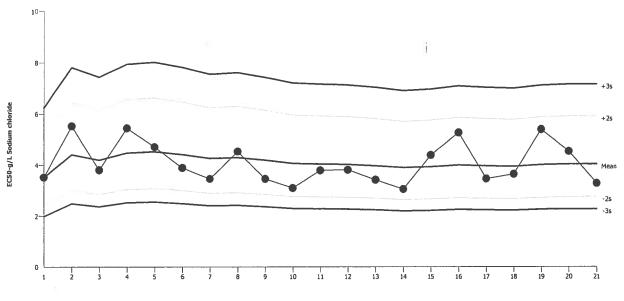
Endpoint: 7d Survival Rate

Material:

Sodium chloride

Source: Reference Toxicant-REF





4.035 Count: 20 -2s Warning Limit: 2.756 -3s Action Limit: 2.278 Mean: +3s Action Limit: 7.151 Sigma: NA CV: 21.00% +2s Warning Limit: 5.91

Quali	ty Con	trol Data	a								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2012	Oct	26	16:40	3.517	-0.5182	-0.7207			02-1421-5926	21-0329-5327
2		Nov	6	15:00	5.523	1.488	1.646			08-8386-1484	15-1326-0940
3			21	14:20	3.805	-0.2303	-0.3082			14-5064-0951	17-8868-4523
4			28	16:00	5.443	1.408	1.57			00-6319-5142	17-0763-3639
5		Dec	4	14:50	4.707	0.6725	0.8084			00-6406-0629	05-4089-6432
6			11	16:15	3.888	-0.1475	-0.1952			03-5232-1815	08-4713-1943
7	2013	Jan	3	14:45	3.455	-0.5802	-0.8141			10-5299-0893	17-1092-4822
8			5	16:10	4.531	0.4962	0.6082			21-2657-3398	19-1219-7003
9			8	15:00	3.453	-0.5817	-0.8164			15-7871-4848	05-6299-2184
10			15	16:20	3.096	-0.9392	-1.389			20-8476-2545	11-7633-6017
11			17	16:50	3.785	-0.2501	-0.3356			10-5550-1840	14-0048-6084
12			22	16:15	3.808	-0.2272	-0.304			06-8612-5279	13-0734-1179
13		Feb	5	14:10	3.413	-0.6218	-0.8776			17-1491-1284	01-1442-0752
14			12	14:30	3.051	-0.9842	-1.466			01-6356-7312	08-3319-7756
15			26	16:30	4.385	0.3495	0.4356			08-7628-4268	07-6670-6949
16		Mar	5	14:15	5.268	1.233	1.398			06-1729-3880	07-6343-0859
17			12	16:30	3.458	-0.5766	-0.8086			05-5242-9647	15-5916-0190
18			15	16:20	3.641	-0.3936	-0.5382			18-6918-4054	01-1476-6508
19			19	14:40	5.39	1.355	1.519			16-0681-5909	21-3871-5608
20			21	15:35	4.535	0.4998	0.6124			01-1756-1842	09-7218-0153
21			26	17:00	3.278	-0.7571	-1.09			08-9032-1193	21-4259-1882

04 Apr-13 10:40 (1 of 1) Report Date:

Chronic Larval Fish Survival and Growth Test

Pacific EcoRisk

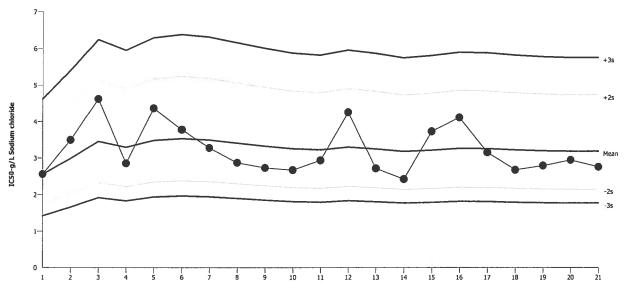
Test Type: Growth-Survival (7d)

Organism: Pimephales promelas (Fathead Minn Material: Sodium chloride

Protocol: EPA-821-R-02-013 (2002) Endpoint: Mean Dry Biomass-mg

Reference Toxicant-REF Source:





Mean:	3.187	Count:	20	-2s Warning Limit:	2.151	-3s Action Limit:	1.767
Sigma:	NA	CV:	21.70%	+2s Warning Limit:	4.724	+3s Action Limit:	5.751

Qualit	ty Con	trol Data	а								
Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2012	Oct	20	16:45	2.56	-0.6266	-1.113			19-3973-2531	10-2107-9972
2			26	16:40	3.5	0.313	0.4763			02-1421-5926	03-9941-4591
3		Nov	6	15:00	4.62	1.433	1.888			08-8386-1484	11-7692-3355
4			21	14:20	2.856	-0.3305	-0.5566			14-5064-0951	07-7804-4882
5			28	16:00	4.363	1.177	1.597			00-6319-5142	18-1834-6198
6		Dec	4	14:50	3.779	0.5918	0.8659			00-6406-0629	15-0408-8854
7			11	16:15	3.279	0.09181	0.1444			03-5232-1815	13-6109-7092
8	2013	Jan	3	14:45	2.87	-0.3169	-0.5326			10-5299-0893	05-8688-4488
9			8	15:00	2.73	-0.4567	-0.7864			15-7871-4848	03-3619-1173
10			15	16:20	2.67	-0.5163	-0.8986			20-8476-2545	10-5708-8737
11			17	16:50	2.936	-0.2504	-0.416			10-5550-1840	03-0930-3918
12			22	16:15	4.251	1.064	1.465			06-8612-5279	09-5587-7133
13		Feb	5	14:10	2.715	-0.4714	-0.8138			17-1491-1284	19-2180-6599
14			12	14:30	2.424	-0.7624	-1.39			01-6356-7312	20-0395-8186
15			26	16:30	3.733	0.5459	0.8038			08-7628-4268	00-2068-0318
16		Маг	5	14:15	4.11	0.9236	1.294			06-1729-3880	14-9227-3036
17			12	16:30	3.155	-0.0317	-0.05082			05-5242-9647	13-6095-3744
18			15	16:20	2.678	-0.509	-0.8848			18-6918-4054	07-9276-3319
19			19	14:40	2.793	-0.3937	-0.6704			16-0681-5909	06-3936-9007
20			21	15:35	2.947	-0.2401	-0.3983			01-1756-1842	11-0455-8006
21			26	17:00	2.758	-0.4289	-0.7348			08-9032-1193	16-6380-5002

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client:	Refe	rence Toxican	t	Organism Log#:	7154	Age: 648 has
Test Material: _	Sc	dium Chloride		Organism Supplier:	Agiato	~ ~~~~
Test ID#:	51212	Project #:	20756	Control/Diluent:	EPAMH	
Test Date:	3/26113	Randor	nization: 4.6.2	Control Water Batch:	1581	

Treatment	Temp	р рН		D.O. (mg/L)		Conductivity (µs/cm)		# Live Organisms				
(g/L)	("C)	new	old	new	old	New	Old	A	B	C	D	SIGN-OFF
Control	as.5	8.13	8.01	8.6	8.3	304	305	10	10	10	10	3130/13
0.75	as.5	8.03	7.86	8.5	8.3	1949	1932	10	9	9	8	Test Solution Prep.
1.5	25.5	7.99	1.82	2.8	8.3	3180	3500	9	9	9	10	New WQ: KP
3	ఫ క.5	7.94	7.76	8.6	8.3	6040	6180	9	9	10	9	Renewal Time: 0930
6	85.5	7.86	1.10	8.9	8.3	11.170	9550	3	5	8	8	Renewal Signoff:
9	_	_	_	_	~	-	-	-		_	_	Old WQ:
Meter ID	BOA	PHIS	时间	RD06	2007	EC07	Ec 04					RT Stock Batch #:
Control	25.4	8.07	8.0	28.5	8.0	303	324	10	10	10	10	Date: 3/31/13
0.75	75.9	8.03	7.75	8.6	7.7	1926	1997	10	9	9	8	Test Solution Prep:
1.5	75.9	8.01	7.68	8.7	7.6	3370	3310	9	9	9	10	New WQ: FOUR
3	25.9	7.95	7.62	9.0	7.4	6390	6370	8	9	9	9	Renewal Time:
6	25.9	7,89	7.59	9.5	7.5	11740	11240	7	3	7	7	Renewal Signoff
9	1	,	-	į)	. ~		_	_			old WQ: FOUR
Meter ID	304	PH19	8419	RDOY	P004	E(06	£06					RT Stock Batch #: S3
Control	25,8	B-03	7.91	8.2	7.6	302	311	10	10	10	10	Date 4-1-13
0.75		8.02	7.80	8.3	7.7	1837	1945	10	9	9	8	Test Solution Prep
1.5	25.8	8.01	7.74	8.4	7.5	3440	3430	9	9	9	10	New WQ VU _
3	25.8	1.94	7.66	8-6	7.3	6230	6470	6	7	9	6	Renewal Time 0930
6	25.8	186	7.60	8-6	7.8	11630	11900	2	1	4	5	Renewal Signoff
9		~	_		~	_	_	_	_	_	_	Old WQ: Of
Meter ID	30A	Phis	DHIS	1406	1006	Ecor	Ee06					RT Stock Batch #:
Control	25.3		7.88		6.2		328	10	10	10	10	Date: 4/2/13
	25.3		7.78		6.0		1824	10	9	9	И	Termination Time
1	25.3		7.60		6.3		3460	9	9	8	10	Termination Signoff
	25.3		7.57		6.2		6480	5	3	6	6	Old WQ RA
i i	25.3		1.57		6.8		11800			2	4	
9	-		-		_		-	-	_	_	_	
Meter ID	30A		PH15		RD07		Eco6					

7 Day Chronic Fathead Minnow Reference Toxicant Test Data

Client:	Refe	rence Toxicant		Organism Log#:	7154	Age:	248 hrs
Test Material:	So	dium Chloride		Organism Supplier:	Agreater		——————————————————————————————————————
Test ID#:_	51212	Project #:	20756	Control/Diluent:	EPAMH		
Test Date: _	3/26/13	Random	zation: U. G. 2	Control Water Batch:	15	61	

Treatment (g/L)	Temp	pH			(mg/L)		ity (µs/cm	2	# Live (Organism	ıs	SIGN-OFF
	(°C)	New	Old	New	Old	New	Old	A	В	С	D	Date
Control	25.5	8.20		8.2		302		10	10	16	10	
0.75	25,5	8.11		8.2		1758		10	10	10	10	Test Solution Prep
1.5	25.5	8.06		8.3		3160		10	16	10	10	New WO FOLB
3	25,5	8.00		8.5		5770		10	10	10	10	Initiation Time
6	25.5	7.94		9.0		10920		10	10	10	10	Initiation Signoff
9	25,5	7.85		9.9		16080		10	10	10	10	RT Stock Batch #: 152
Meter 1D	309	PH 15		RD07		EC07						
Control	25.9	8.47	7.89	8.7	7.9	301	297	10	10	10	10	3-27-13
0.75	259	8.31	7.81	8.9	79	1812	1702	10	10	10	9	Test Solution Prep
1.5	75.9	8.24	7.78	9.0	8.2	3170	3/20	10	9	10	10	New WQ: RA
3	25.9	8.17	7.75	9.2	8.2	5910	5810	10	10	10	10	Renewal Time
6	25.9	8.10	7.71	9.9	8.3	11040	11070	10	10	10	10	Renewal Signoff:
9	25.9	8.02	7.65	10.2	3.3	16000	(6080	3	1	3	1	Old WQ: DJ-J
Meter ID	30A	PH16	PH16	RD04	RDOY	ECO6	E(06					RT Stock Batch #: /5Z
Control	25.9	8.31	7.78	8.5	6.6	296	318	10	10	10	10	Date: 3.28-12
0.75	25.9	8.15	7.74	8.3	6.3	194848	1861	10	9	10	9	Test Solution Prep
1.5	<i>25.</i> 9	8.08	7.72	8.4	6.4	3280	3240	9	G	9	10	New WQ:
3	25.9	8.01	7.71	8.5	6-7	5980	5960	9	10	1()	9	Renewal Time 1000
6	25.9	7.95	7.69	9.2	6.9	11000	11110	10	10	10	9	Renewal Signoff
9	25.9	_	7.68)	7.4		16110	~	0	O	0	Old WQ
Meter ID	30A	PHIB	PHI8	PD07	R006	Eco6	E07					RT Stock Batch #: 15Z
Control	25.8	8.09	1.18	8:7	8-9	304	308	10	10	/0	10	Date: 3/29/13
0.75	25.8	7.99	7-68	8.8	1.5	1913	2029	10	9	9	8	Test Solution Prep
1.5	25.8	7.94	1.63	9,0	7.6	3480	3360	9	Ġ	9	10	New WQ LID
3	25.8	7.88	1.59	9.1	7-7	6050	6140	9	9	10	Q	Renewal Time:
6	25.8	7.90	1.53	9.1	1.6	9380	11280	7	8	9		Renewal Signoff
9	_	-	_	-		-	_	_	_			Old WQ
Meter ID	30A	DHIS	DH 19	Kroul	RD04	Ec06	Eco8					RT Stock Baich #: 162/153

Fathead Minnow Dry Weight Data Sheet

Client:	Reference Toxicant	Test ID #:_	51212	Project #:20756	
Sample:	Sodium Chloride	Tare Weight Date:	4/1/13	Sign-off: /A	
Test Date:	4/2/13	Final Weight Date: _	4313	Sign-off: JLA	

Pan ID	Concentration Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Control A	139.18	145.71	10	0653
2	В	163.11	171.47	10	0.836
3	С	145.36	152.99	10	0.763
4	D	142.59	150.61	10	0.802
5	0.75 A	157.23	164.72	10	0.749
6	В	164.85	173.08	10	0.823
7	С	115.54	123.74	10	0.820
8	D	165.93	172.90	10	0.697
9	1.5 A	156.37	164.4D	10	0.803
10	В	167.70	175.19	10	0.749
11	С	172.67	179.73	10	0.700
12	D	/19.00	126.31	10	0.7310
13	3 A	157.31	161.36	10	0,405
14	В	160.35	162.36	10	0.201
15	С	151.02	53.72	lo	0.270
16	D	160.12	163.92	10	0.360
17	6 A	147.65	148.13	10	0.04 8pm
18	В	120.07	120.74	lo	0.067
19	С	125.46	126.70	10	0.124
20	D	112.44	114.40	10	0.196
21	9 A	157.40	_	10	- 1 2
22	В	162.85	-	10	- 7
23	С	131.34	-	lo	
24	D	145.04		lo	- 1
QA1		170,57	170.59		
QA2		152.45	152.49		
QA3		148.56	148.60		
Balance ID:		BALOI	BALOI		

Appendix R

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Hyalella azteca*



Report Date: Test Code: 16 Apr-13 17:01 (p 1 of 1) 51310 | 02-5285-7648

											0.0.0	2 0200 7040
Hyalella 96-h	n Acute Survival T	est									Pacif	ic EcoRisk
Batch ID:	14-5371-8106	Tes	Type:	Survival (96h)			Aı	nalyst:	Meline	da Hooper		
Start Date:	30 Mar-13 10:40	Pro	locol:	GCML			Di	luent:	SAM-	5 S		
Ending Date:	: 03 Apr-13 09:40	Spe	cies:	Hyalella azteca			В	rine:	Not A	pplicable		
Duration:	95h		rce:	Chesapeake Cu	ıltures, Inc.		Ą	ge:	11			
Sample ID:	11-3840-8023	Cod	e:	NaCl			C	lient:	Refer	ence Toxic	ant	
-	: 30 Mar-13 10:40		erial:	Potassium chio	ride			roject:	20795			
-	e: 30 Mar-13 10:40		rce:	Reference Toxic				-,				
	NA (23.4 °C)		ion:	In House								
Comparison	Summary								******			
Analysis ID	Endpoint		NOEL	. LOEL	TOEL	PMSD	TU	Meth	hod			
06-9660-4484		te	0.4	0.8	0.5657	NA		Fish	er Exac	t/Bonferro	ni-Holm Te	est
Point Estima	ite Summary					""" 					·	
Analysis ID	Endpoint		Level	g/L	95% LCL	95% UCL	TU	Meti	hod			
	96h Survival Ra	te	EC50		0.454	0.704	***	Bino	mial/G	raphical		
96h Survival	Rate Summary		·									
C-g/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std	Err	Std Dev	CV%	%Effect
0	Lab Water Contr	10	1	1	1	1	1	0		0	0.0%	0.0%
0.1		10	1	1	1	1	1	0		0	0.0%	0.0%
0.2		10	1	1	1	1	1	, 0		0	0.0%	0.0%
0.4		10	1	1	1	1	1	0		0	0.0%	0.0%
0.8		10	0	0	0	0	0	0		0		100.0%
1.6		10	0	0	0	0	0	0		0		100.0%
96h Survival	Rate Detail											
C-g/L	Control Type	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep	7	Rep 8	Rep 9	Rep 10
0	Lab Water Contr	1	1	1	1	1	1	1		1	1	1
0.1		1	1	1	1	1	1	1		1	1	1
0.2		1	1	1	1	1	1	1		1	1	1
0.4		1	1	1	1	1	1	1		1	1	1 🖟
0.8		0	0	0	0	0	0	0		0	0	0
1.6		0	0	0	0	0	0	0		0	0	0
96h Survival	Rate Binomials											
C-g/L	Control Type	Rep 1	Rep 2		Rep 4	Rep 5	Rep 6	Rep		Rep 8	Rep 9	Rep 10
0	Lab Water Contr		1/1	1/1	1/1	1/1	1/1	1/1		1/1	1/1	1/1
0.1		1/1	1/1	1/1	1/1	1/1	1/1	1/1		1/1	1/1	1/1
0.2		1/1	1/1	1/1	1/1	1/1	1/1	1/1		1/1	1/1	1/1
0.4		1/1	1/1	1/1	1/1	1/1	1/1	1/1		1/1	1/1	1/1
0.8 1.6		0/1 0/1	0/1 0/1	0/1 0/1	0/1	0/1	0/1	0/1		0/1	0/1	0/1

Analyst: QA:

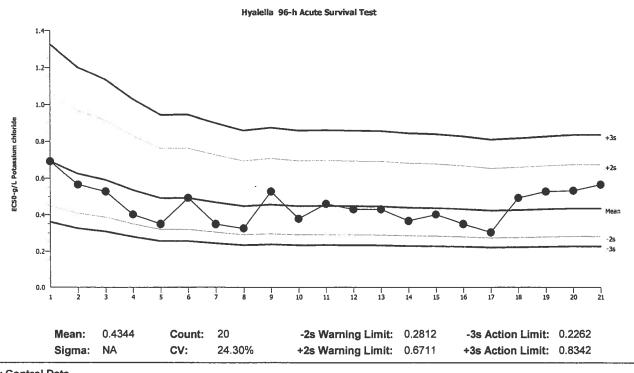
Hyalella 96-h Acute Survival Test

Test Type: Survival (96h)

Organism: Hyalella azteca (Freshwater Amphip Protocol: GCML

GCML

Organism: Hyalella azteca (Freshwater Amphip Source: Reference Toxicant-REF



Point Y	ear	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1 2	2012	Sep	5	16:20	0.6905	0.2562	2.131	(+)		02-5537-4055	06-7697-6829
2			10	16:50	0.5657	0.1313	1.214			01-0322-5447	01-3121-7564
3			15	17:00	0.5278	0.09341	0.8955			20-8930-5803	20-1486-5380
1			24	17:00	0.4	-0.0344	-0.3793			06-7243-0311	19-7074-0004
5		Oct	1	14:50	0.3482	-0.08618	-1.017			13-5493-3751	03-3787-8066
6			8	15:20	0.4925	0.05806	0.5768			17-9863-7009	13-9275-7281
7			15	14:45	0.3482	-0.08618	-1.017			19-6387-5950	12-3302-5717
3			22	15:00	0.3249	-0.1095	-1.335			01-6277-3313	10-7412-5627
9		Nov	8	16:40	0.5278	0.09341	0.8955			03-4929-5256	16-1673-6358
10			21	14:00	0.3768	-0.0576	-0.654			09-9953-5870	16-8000-4467
11			30	15:40	0.4595	0.02508	0.2581			11-5206-8410	12-2766-5331
12		Dec	1	16:20	0.4287	-0.00569	-0.06058			05-4371-0343	03-5226-5028
13			11	15:20	0.4287	-0.00569	-0.06058			06-8255-4240	09-7757-9218
14			23	16:15	0.3651	-0.06926	-0.7986			01-7471-3845	03-0326-8601
15 2	2013	Jan	26	14:30	0.4	-0.0344	-0.3793			12-4366-1537	08-0630-0748
16		Feb	6	16:10	0.3482	-0.08618	-1.017			08-2550-7353	20-4845-9431
17			11	16:00	0.3031	-0.1313	-1.654			10-1800-3331	17-6979-4440
18		Mar	7	13:20	0.4925	0.05806	0.5768			04-1588-9441	14-4479-8222
19			16	16:30	0.5272	0.09283	0.8904			10-2101-8156	13-0138-9882
20			21	14:45	0.5319	0.09753	0.9313			10-2733-2307	00-9473-8254
21			30	10:40	0.5657	0.1313	1.214			02-5285-7648	20-5018-8599

96 Hour *Hyalella azteca* Reference Toxicant Test Data

Client:	Reference Toxicant	Organism Log #:	7165 Age: 11-12 days					
Test Material:	Potassium Chloride	Organism Supplier:	Chesapea	ake Cultures				
Test ID#:	51310 Project # 20795	Control/Diluent:	SAM-5 H	yalella Water				
Test Date: _	3/30/13 Randomization: 10.4.3	Control Water Batch:	147					
Feeding To	Time: 830 Initials:	Feeding T46	Time: 825	Initials:				

	Temp		D.O.	Conductivity	# Live Animals										1
Treatment (g/L)	(°C)	pН	(mg/L)	(μS/cm)	A	В	С	D	E	F	G	Н	I	J	Sign-Off
Control	23.4	8.06	8.5	430	7	1	1	1	1	1	1	1	1	1	Test Solution Prep: SVV
0.1	23.4	7.99	8.5	635	7	1	1	1	1	1	1	1	1	1	New WQ: FOLB
0.2	23.4	7.97	8.6	822	Т	1	1	1	1	<u> </u>	1	1	1	1	Initiation Date: 3.30-12
0.4	23.4	7.95	8.6	1214	T	1	1	1	1	1	1	1	1	1	Initiation Date: 3.30-13 Initiation Time: 1040
0.8	23.4	7.94	8.6	1930	1	1	1:	T	1	1	T	1	1	1	Initiation Signoff:
1.6	23.4	7.93	8.6	3370	T	1	1	T	ī	1	,	1	1	1	RT Batch #:
Meter ID	43A	PH19	2004	E08											
Control	23.3					1	1	1	1		1)	1	(Count Date: 3/31/13
0.1	5.86				1	1	1	1	1	1	1	(1	1	Count Time: 1000
0.2	ವಿಕ.3				1	1	1	1	1	1	1	1	1	i	Count Signoff:
0.4	5,86				l	1	1	1	1	1	1	1	1	1	
0.8	23.3				٥	0	0)	0		0	0	1	1	
1.6	23.3				0	0	0	0	Ó	0	0	O	0	0	
Meter ID	43A														
Control	23.4				1	1	1	1	1	1	ACCOCCACIO	00000	1	1	Count Date: 4-1-13
0.1	23.4				1	1	1	,	1	1	1)	1	1	Count Time: 815
0.2	23.4				1	1	1	1	1	1	-	1	1	1	Count Signoff:
0.4	23.4				1	1	1	1	(1	1	1	1	i	
0.8	23.4				_	_	_	T	_	1		_		0	
1.6					_	_	-		_	_	J	_	_	_	
Meter ID	43 A														
Control	234				1	(1	10000	1	*****	1		RRRRR L	RRRRR	Count Date: 410 1 . 2
0.1	23.4				T	1	1		1		1	1	1	1	Count Date: 4/2/13 Count Time/90/1000
0.2	23.4					1	1	,	ij	1	1	1)	,	Count Signoff:
0.4	3.4				i	1		1	,		,	1	1		
0.8	23.4				_	_	_	0		\circ	_	_	C	_	
1.6	~				-	-	_	_	-	_	_	-	_		
Meter ID	43A														
Control	23.3	7.68	8.2	456	1	00000	8.8.8.8.8		1	1		1	88888	888888	Termination Date4/3/13
	23.3	7.75	8.0	654	1	1	1	<u>, </u>	1	1	1	1	1	i	Termination Time:
	23.3	7.79	7.7	838	1	1	1	1	1	1	1	1	1	1.	Termination Time: 0940 Termination Signoff: MK
	23.3	7.80	7.7	1234	1	1	1	1	•	-	1	,	1	1	Old WQ: YK
	23.3	781	7.9	1932	_	-	-		_		-	<u> </u>	-		
1.6	_	7-85		3490		7		_	- s	-	-	_	-	_	
Meter ID	43A	4	1006	Eco6											